

Volume II

Institutional Controls Plan

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U.S. Department of Energy

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Draft**

Emergency Contact

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Comprehensive Legacy Management and Institutional Controls Plan, Revision 2

Significant Changes Summary

Section	Description of Modification	Driver/Technical Information
Volume I		
Section 1	Added information concerning the implementation of the DOE-LM Environmental Management System to Section 1.2.	Executive Order 13423. DOE Order 450.1, Environmental Protection Program.
Section 2	Updated Section 2.2.3 Current Conditions.	July 2007 response to OEPA comment 1.
	Updated Figure 1 with current flyover picture.	
	Corrected line spacing of indented paragraph.	March 2007 response to OEPA comment 4.
	Updated Figure 2 with current flyover picture.	
	Updated Section 2.4.4 Uncertified Areas to discuss 60-Main Drainage Corridor culvert and adjacent 18-inch culvert.	March 2007 response to OEPA comment 5.
	Corrected reference to Figure 4 on Figure 3.	March 2007 response to OEPA comment 7.
	Inserted Figure 4 - Uncertified Subsurface Utilities.	July 2007 response to OEPA comments 2 and 3.
Section 3	No significant changes.	
Section 4	No significant changes.	
Section 5	Corrected typographical error.	March 2007 response to OEPA comment 8.
	Clarified the information provided.	March 2007 response to OEPA comment 9.
	Updated the LM website address.	March 2007 response to OEPA comment 11.
Section 6	Simplified the funding information provided.	
Appendix A	Removed the Summary Legacy Management Budget Estimate table.	
Volume II		
Section 1	No significant changes.	
Section 2	Updated Figure 1 with current flyover picture.	March 2007 response to OEPA comment 15 and 16.
	Discussed the Interim Residual Risk Assessment Report.	
	Corrected line spacing of indented paragraph.	March 2007 response to OEPA comment 4.
	Inserted text concerning the inspection of the 60-Main Drainage Corridor culvert and adjacent 18-inch culvert.	March 2007 response to OEPA comment 14.
	Revised the site inspection process.	Inspection approach revised following one year of quarterly inspection experience and following OEPA comment on the March and June 2007 quarterly site inspections.
Section 3	Revise mowing and baling frequency from annually to a 3-year rotation for established cell caps. Updated text to reflect revised inspection process.	Inspection approach revised following one year of quarterly inspection experience and following OEPA comment on the March and June 2007 quarterly site inspections.

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Section	Description of Modification	Driver/Technical Information
Volume II (cont.)		
Section 4	No significant changes.	
Section 5	Added Fernald Community Alliance to Section 5.2.1.	March 2007 response to OEPA comment 20.
	Updated information regarding the status of FRESH.	March 2007 response to OEPA comment 21.
	Added text describing the University of Cincinnati's role in the Visitors Center design.	March 2007 response to OEPA comment 23.
Appendix A	Revised Figure 3-1.	March 2007 response to OEPA comment 24.
	Revised Figure 3-3.	March 2007 response to OEPA comment 25.
Appendix B	No changes.	
Appendix C	Updated Fernald Preserve contact information.	
Appendix D	Revised OSDF Inspection Checklist.	Checklist was developed prior to closure. Revisions are more applicable to current inspection and reporting conditions.
Attachment A - OMMP		
Section 1	Revised 1 st paragraph to indicate the OMMP became part of the LMICP in January 2006.	
Section 2	No changes.	
Section 3	Minor text edits, Figure 3-7 updated through 2006.	
Section 4	Section 4.1.1: Revised text to reflect current leachate flow volume.	Flow volume has decreased since last revision.
	Table 4-1: Corrected Ops Well IDs for Waste Pits extraction wells.	
Section 5	Section 5.2.1: Updated to reflect current ion exchange resin changeout practice.	Previous resin changeout practice no longer appropriate given the plant's excess treatment capacity.
	Section 5.7: Updated to reflect current practice of reviewing sample results.	
Section 6	Section 6.2.3.1: Updated to reflect current maintenance tracking method.	Previous tracking method was no longer cost effective.
	Section 6.3: Updated based on current information.	
	Section 6.3.2: Updated to reflect current information.	
Section 7	Updated to reflect the Site's current organizational responsibilities.	
Attachment B - PCCIP		
Section 1	Incorporate PCCIP into the LMICP. It will no longer be referred to as a stand alone document.	Not required to be a stand-alone plan.
Section 2	No significant changes.	
Section 3	No significant changes.	
Section 4	No significant changes.	
Section 5	No significant changes.	
Section 6	No significant changes.	
Section 7	No significant changes.	

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Section	Description of Modification	Driver/Technical Information
Attachment B - PCCIP (cont.)		
Section 8	Revise mowing and baling frequency from annually to a 3-year rotation for established cell caps. Updated text to reflect revised inspection process.	Revised mowing approach more accurately mimics a prescribed burn rotation.
Section 9	No significant changes.	
Section 10	No significant changes.	
Section 11	Deleted modification process.	Modifications will be conducted through LMICP review.
Section 12	No significant changes.	
Attachment C - GWLMP		
Section 1	No significant changes.	
Section 2	No significant changes.	
Section 3	Temporary exclusion of control charts from SER reports.	Letter to EPA/OEPA dated April 19, 2007, "Exclusion of the Control charts for the Onsite Disposal Facility Leak Detection Program from the 2006 Site Environmental Report. OEPA concurrence, letter dated May 21, 2007.
	Proposal: End annual Appendix I and PCB sampling at LCS, pending EPA/OEPA approval of the Common Ion Study and finalization of a refined baseline.	OSDF is not operating, Common Ion Study is ending, refined baseline will be finalized soon.
Section 4	No significant changes.	
Section 5	No significant changes.	
Section 6	No significant changes.	
Appendix A	No changes.	
Appendix B	Cessation of sampling for common ions.	Eight round of sampling were required, which were met at the end of 2007.
	Proposal: Reduce sampling frequency for LCS, LDS, HTW, and GMA Wells from quarterly to semi annual beginning Jan 1, 2008.	Sufficient samples have been collected to support the Common Ion Study.
	Sampling for 1,1-dichloroethene in Cell 3 LCS will continue until results have been further evaluated using new method proposed in 2006 SER. Sampling of 1,1-dichloroethene in Cell 3 LDS has stopped.	Based on sampling results reported in 2006 SER.
	Revised requirements for filtering of groundwater samples.	Review of historical data indicated no significant concentration difference between filtered and unfiltered sample results.
	Eliminated the collection of field blanks.	Not required by the LM QAPP.

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Section	Description of Modification	Driver/Technical Information
Attachment C - GWLMP (cont)		
Appendix C	No significant changes.	
Appendix D	Section 2.0: Updated to reflect current system operation.	Facility closure in 2006.
	Section 3.0 & Table 1: Updated to reflect current inspection and maintenance activities that have changed since the facility was closed in 2006. The most significant change is that the annual LCS/LDS line camera inspection will no longer be done as the regulation requiring the inspection is no longer applicable, since the facility closed in 2006.	Facility closure in 2006.
	Section 5.0: Cell specific leachate flow rates and associated days to accumulate the volume that equals 1 foot of head on primary liner were updated to reflect current conditions.	Leachate flow rates have decreased since the last LMICP revision.
Appendix E	Included two new figures presenting a strategy for statistical evaluation of sampling results.	Figures and new strategy presented in 2006 SER.
Attachment D - IEMP		
Section 1	Incorporate IEMP into the LMICP. It will no longer be referred to as a stand alone document.	Not required to be a stand-alone plan.
Section 2	No significant changes.	
Section 3	Replaced 10-year time of travel footprint with Waste Storage Area (Phase II) Remediation footprint.	Current aquifer remedy system design based on the Waste Storage Area (Phase II) Design.
	Removed Direct Push Locations 12367 and 12371 from annual direct-push sampling program.	Locations are no longer located in the 30 ug/L total U plume.
	Field filter samples from Waste Storage Area Monitoring Well 2010.	Monitoring well has a historical record of being biofouled.
	Updated tense of text throughout section to reflect post closure status.	Site is currently in post closure.
Section 4	Added 5 additional surface water sampling locations. Updated Figure 4-2 to include the 5 locations.	July 2007 response to OEPA comment 4.
	Proposal: Remove radionuclides from sampling for IEMP characterization requirements.	Review of historical data indicated these constituents' concentrations have always been well below the FRL.
	For low level mercury analysis, all sampling equipment is sent to an offsite laboratory for decontamination and certification of cleanliness.	To clarify and align the IEMP with the analytical method requirements.
Section 5	No significant changes.	
Section 6	Update list of regulatory drivers to those that are applicable post-closure.	
Section 7	No significant changes.	
Appendix A	Replaced 10-year time of travel footprint with Waste Storage Area (Phase II) Remediation footprint.	Current aquifer remedy system design based on the Waste Storage Area (Phase II) Design.
	Updated tense of text throughout section to reflect post closure status.	Site is currently in post closure.

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Significant Changes Summary

Section	Description of Modification	Driver/Technical Information
Attachment D - IEMP (cont.)		
Appendix B	No changes.	
Appendix C	No significant changes.	
Appendix D	Added one year of wetland mitigation monitoring to the A-6PI wetlands.	Extended monitoring due to drought conditions experienced in 2007.
Attachment D.1	Deleted Attachment D.1, Sloan's Crayfish Management Plan.	Plan is no longer anticipated to be needed, since remedial activities are complete.
Attachment E - CIP		
NA	Updated Section 4.2 - Interested Community Members, Local, City, and State Elected Officials.	March 2007 response to OEPA comment 37.
NA	Updated CIP Appendix A with the most current information.	March 2007 response to OEPA comment 38.

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Appendixes

Appendix A	Records of Decision and Associated Documents
Appendix B	Institutional Control Requirements as Stated in the Records of Decision
Appendix C	Fernald Preserve Contact Information
Appendix D	Example of OSDF and Fernald Preserve Inspection Forms

Attachments

Attachment A	Operations and Maintenance Master Plan for Aquifer Restoration and Wastewater Treatment
Attachment B	Post-Closure Care and Inspection Plan
Attachment C	Groundwater/Leak Detection and Leachate Monitoring Plan
Attachment D	Integrated Environmental Monitoring Plan
Attachment E	Community Involvement Plan

Acronyms and Abbreviations

ARARs	applicable or relevant and appropriate requirements
CAWWT	converted advanced wastewater treatment facility
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CIP	Community Involvement Plan
CFR	<i>Code of Federal Regulations</i>
CRARE	Comprehensive Remedial Action Risk Evaluation
DAAP	University of Cincinnati College of Design, Art, Architecture, and Planning
D&D	decontamination and demolition
DOE	U.S. Department of Energy
EM	Office of Environmental Management
EPA	U.S. Environmental Protection Agency
FCAB	Fernald Citizens Advisory Board
FEMP	Fernald Environmental Management Project
FRESH	Fernald Residents for Environmental Safety and Health
FRL	final remediation level
GWLMP	Groundwater/Leak Detection and Leachate Monitoring Plan
IC Plan	Institutional Controls Plan
IEMP	Integrated Environmental Monitoring Plan
LCS	leachate collection system
LDS	leak detection system
LM	Office of Legacy Management
LMICP	Comprehensive Legacy Management and Institutional Controls Plan
NPDES	National Pollutant Discharge Elimination System
OAC	Ohio Administrative Code
OEPA	Ohio Environmental Protection Agency
OMMP	Operations and Maintenance Master Plan for the Aquifer Restoration and Wastewater Project
OSDF	on-site disposal facility
OU	operable unit
PCCIP	Post-Closure Care and Inspection Plan
PDF	portable document file
ppb	parts per billion
RCRA	Resource Conservation and Recovery Act
RI/FS	Remedial Investigation/Feasibility Study
ROD	record of decision
SEP	Site-Wide Excavation Plan
WAC	waste acceptance criteria

End of current text

Executive Summary

This Comprehensive Legacy Management and Institutional Controls Plan (LMICP) was developed to document the planning process and the requirements for the long-term care, or legacy management, of the Fernald Preserve. The LMICP became effective when the U.S. Department of Energy (DOE) Office of Environmental Management (EM) made its determination of reasonableness on Fluor Fernald Inc.'s declaration of physical completion. It serves the same function as the Long-Term Surveillance and Maintenance Plan used at other DOE Office of Legacy Management (DOE-LM) sites. The LMICP is a two-volume document with supporting documents included as attachments to Volume II. Volume I provides planning details for the management of the Fernald Preserve that go beyond those identified as institutional controls in Volume II. Primarily, Volume II is a requirement of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), providing institutional controls that will ensure the cleanup remedies implemented at the Fernald Preserve will protect human health and the environment. The format and content of Volume II follows U.S. Environmental Protection Agency (EPA) requirements for institutional controls. Once approved, Volume II becomes enforceable under CERCLA authority.

Volume I is the Legacy Management Plan. This plan is not a required document under the CERCLA process; it is not a legally enforceable document. It provides DOE-LM's management plan for maintaining the Fernald Preserve and fulfilling DOE's commitment to maintain the Fernald Preserve following closure. The plan discusses how DOE, specifically DOE-LM, will approach the legacy management of the Fernald Preserve. It describes the surveillance and maintenance of the entire site, including the on-site disposal facility (OSDF). It explains how the public will continue to participate in the future of the Fernald Preserve. Also included in the Legacy Management Plan is a discussion of records and information management. The plan ends with a discussion on funding for the legacy management of the site.

Volume II is the Institutional Controls Plan (IC Plan). The IC Plan is required under the CERCLA remediation process when a physical remedy does not allow for full, unrestricted use or when hazardous materials are left on site. The plan is a legally enforceable CERCLA document and part of the remedy for the site (an EPA requirement). The plan outlines the institutional controls that are established for and enforced across the entire site, including the OSDF, to ensure that human health and the environment continue to be protected following the completion of the remedy. The IC Plan has five attachments that lend support to and provide details regarding the established institutional controls. The attachments provide further information on the continuing groundwater remediation (pump-and-treat) system (Attachment A); the OSDF cap and cover system (Attachment B); the leak detection and leachate management systems for the OSDF (Attachment C); and the environmental monitoring that will continue following closure (Attachment D). Prior to transition, these four attachments were stand-alone documents with their own review and revision cycle. These documents have been incorporated into the LMICP and no longer have their own review and revision cycle. They will follow the review and revision cycle identified below. Also attached to Volume II is the Community Involvement Plan (CIP) (Attachment E), a CERCLA-required document, developed by DOE. The CIP explains in detail how DOE will ensure that the public has appropriate opportunities for involvement in post-closure activities.

Upon approval, it is anticipated that the LMICP will be finalized by January each year, to correspond with calendar-year monitoring and reporting. Between October and January, EPA and Ohio Environmental Protection Agency comments will be addressed.

The future LMICP schedule will be as follows:

- Each June, the annual site environmental reports will be submitted. They will make recommendations based on the previous year's monitoring information.
- Each October, an annual review of the LMICP will be submitted. It will identify updates as necessary.
- Each January, the LMICP will be finalized to correspond with the monitoring and reporting schedule.

Pertinent information associated with the CERCLA 5-year reviews will be included in the LMICP revisions as needed.

1.0 Introduction

The U.S. Department of Energy (DOE) manages the Fernald Preserve, owned by the federal government, which is situated on a 1,050-acre tract of land approximately 18 miles northwest of Cincinnati, Ohio. The Fernald Preserve is located near the unincorporated communities of Ross, Fernald, Shandon, and New Haven. Land use in the area consists primarily of residential areas, farming, gravel excavation operations, light industry, and parks.

The Comprehensive Environmental Response Compensation and Liability Act (CERCLA) is the primary driver for the environmental remediation of the Fernald Preserve. The site was divided into five operable units (OUs), and a Remedial Investigation and Feasibility Study (RI/FS) was conducted for each unit. Based on the results of the RI/FS, Records of Decision (RODs) were issued outlining the selected remedy for each OU.

- **Record of Decision for OU1, Waste Pits Area**—The remedy for OU1 included removing all material from the waste pits, stabilizing the material by drying it, and shipping it off site for disposal. OU1 field activities ended June 2005.
- **Record of Decision for OU2, Other Waste Units**—The remedy for OU2 included removing material from the various units, disposing of material that meets the on-site waste acceptance criteria (WAC) in the on-site disposal facility (OSDF), and shipping all other material off site for disposal. The WAC were developed by DOE and regulators, with input from the stakeholders and the public, to strictly control the type of waste disposed on site. The WAC are documented in the *Waste Acceptance Criteria Attainment Plan for the On-site Disposal Facility* (DOE 1998a). OU2 field activities ended November 2003.
- **Final Record of Decision for OU3, Production Area**—The OU3 remedy included decontaminating and decommissioning all contaminated structures and buildings, recycling waste materials whenever possible, disposing of material that meets the on-site WAC in the OSDF, and shipping all other material off site for disposal. OU3 field activities ended October 2006.
- **Record of Decision for OU4, Silos 1–4**—The OU4 remedy included removing and treating all material from the silos, dismantling the silos, and shipping the waste materials and silo debris off site for disposal. OU4 field activities ended May 2006 (final disposal of the Silo 1 and 2 waste is to be determined; field activities relate to the final shipment of OU4 waste off of the Fernald site).
- **Record of Decision for OU5, Environmental Media**—OU5 includes all environmental media, such as soil, sediment, surface water, groundwater, and vegetation. The *Site-Wide Excavation Plan* (SEP) (DOE 1998b) describes the remediation of soils, which includes the excavation of soils that exceed the risk-based final remediation levels (FRL) for a list of constituents of concern as listed in the SEP. The OU5 ROD (DOE 1996) describes the approved remediation method of pump-and-treat for groundwater until levels of uranium in groundwater are less than 30 parts per billion (ppb). In the original ROD, the FRL for uranium in groundwater was 20 ppb. After the U.S. Environmental Protection Agency (EPA) and the Ohio Environmental Protection Agency (OEPA) approved the change, the FRL was raised to 30 ppb, as written in the *Explanation of Significant Differences for Operable Unit 5* (DOE 2001). OU5 field activities related to care and maintenance of the OSDF and aquifer restoration are ongoing.

A list of the ROD and all associated documents is included in Appendix A of this volume.

The Declaration of Physical Completion, or closure, occurred on October 29, 2006. The construction of the OSDF and all site cleanup activities—with the exception of the ongoing actions necessary to achieve the final cleanup of the Great Miami Aquifer—were completed. Once the aquifer is restored, the converted advanced wastewater treatment facility (CAWWT) and associated infrastructure will be decommissioned and dismantled, and the utility corridors and the CAWWT footprint will be remediated (see Volume I, Figure 4). Based on modeling, the projected date of completion of aquifer restoration is 2026.

Ecological restoration followed remediation and was the final step to completing the cleanup of the site. Ecological restoration activities at the site were also being implemented to address wetland mitigation requirements under the Clean Water Act and to stabilize and revegetate areas impacted during remediation.

The OSDF, located on the eastern side of the Fernald Preserve, is complete. The OSDF consists of eight disposal cells, the footprint of which covers an area of approximately 75 acres. A buffer area and a perimeter fence are established around the disposal facility, and the total OSDF area is approximately 120 acres. Approximately 900 acres of the Fernald Preserve have been ecologically restored, having been graded following excavations, amended, seeded, planted, or otherwise enhanced to create ecosystems comparable to native pre-settlement southwestern Ohio. A few facilities remain on site. These include the CAWWT and supporting infrastructure, extraction wells and associated piping and utilities, the outfall line to the Great Miami River, the former Dissolved Oxygen Building, the Restoration storage shed, the former Communications Building, and the former Silos Warehouse. Figure 1 shows the Fernald Preserve's land use.

The DOE Office of Environmental Management (DOE-EM) was responsible for the remediation of the Fernald Site. Post-remediation responsibilities have transitioned to the DOE Office of Legacy Management (DOE-LM). DOE-LM is responsible for the post-remediation operations (including decontaminating and dismantling the aquifer remediation infrastructure), maintenance, and enforcement of institutional controls at the site.

1.1 Purpose and Organization of This Institutional Controls Plan

This Institutional Controls Plan (IC Plan) outlines the institutional controls established and enforced since remediation was completed, with the exception of the groundwater remediation at the Fernald Preserve. This IC Plan documents DOE's approach to maintaining institutional controls as required by EPA under CERCLA. The institutional controls outlined in this plan are designed to ensure the continued protection of human health and the environment following closure of the site. DOE-LM is responsible for monitoring, maintaining, reporting on, and implementing institutional controls at the Fernald Preserve. This IC Plan will be reviewed annually to determine if revisions are required. All revisions will be subject to Regulatory Agency review and will be made available to the community. The IC Plan will also be reviewed every 5 years in conjunction with the CERCLA 5-year review, and revisions will be made as necessary. Revisions can always be made on an as-needed basis if the results of site and OSDF inspections and monitoring require them.

FERNALD LEGACY MANAGEMENT

Future Use

LAND USE

395 acres of Woodlots
332 acres of Prairie
120 acres of OSDF
81 acres of Wetlands
60 acres of Open Water
33 acres of Savanna
29 acres of Infrastructure



Figure 1



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In addition, changes to any of the support plans attached to this IC Plan may trigger revisions to the IC Plan. The approved IC Plan is part of the CERCLA remedy for the Fernald Preserve.

The documents attached to this IC Plan provide further detail and more subject-specific information regarding institutional controls and other post-closure activities. These documents include:

- Attachment A—Operations and Maintenance Master Plan for the Aquifer Restoration and Wastewater Treatment (OMMP)
- Attachment B—Post-Closure Care and Inspection Plan (PCCIP)
- Attachment C—Groundwater/Leak Detection and Leachate Monitoring Plan (GWLMP)
- Attachment D—Integrated Environmental Monitoring Plan (IEMP)
- Attachment E—Community Involvement Plan (CIP)

After approval, the five support documents also become part of the CERCLA remedies.

1.2 Summary of Attachments

The OMMP (Attachment A) establishes the design logic and priorities for the major flow and water treatment decisions needed to maintain compliance with the Fernald Preserve's National Pollutant Discharge Elimination System (NPDES) permit and ROD (OU5) surface water discharge limits. The OMMP is designed to guide and coordinate the extraction, collection, conveyance, treatment, and discharge of all groundwater and leachate (from OSDF). A summary of the information contained in the OMMP is included in Section 3.1.3, "Groundwater Remedy and Monitoring."

The PCCIP (Attachment B) addresses the inspection, monitoring, and maintenance activities necessary to ensure the continued proper performance of the OSDF. Key concepts addressed include ownership, access controls and restrictions, deed and use restrictions, environmental monitoring, OSDF cap and buffer area inspections, custodial maintenance, contingency repair, corrective actions, emergency notifications, reporting, and public involvement. Additional details from this plan are included in Section 3.2.1, "OSDF Inspection and Maintenance."

The GWLMP (Attachment C) specifies the frequencies and parameters being monitored in four horizons for each cell of the OSDF. These horizons are the leachate collection system (LCS), the leak detection system (LDS), perched water in the glacial overburden, and the Great Miami Aquifer (both up-gradient and down-gradient of each cell). Cell-specific data from these four horizons are evaluated holistically in order to verify the integrity of the cells. To date, the data from this comprehensive leak detection program indicate that the liner systems for all of the cells are performing within the specifications established in the OSDF design documentation. The GWLMP will be reviewed with the LMICP annually until the next CERCLA 5-year review. Any modifications to the plan will be based on analysis of the data collected from the ongoing leak detection sampling. The GWLMP governs the post-closure leak detection and leachate monitoring program for the OSDF. Further details from the GWLMP are included in Section 3.2.2, "Leak Detection/Leachate Management."

The IEMP (Attachment D) directs environmental monitoring program elements that support site remediation activities. The document outlines all regulatory requirements for site-wide monitoring, reporting, and remedy performance tracking activated by the applicable or relevant and appropriate requirements (ARARs) identified in the remedy selection documents. The various elements of environmental monitoring that are addressed include groundwater monitoring (Section 3.0), surface water and treated effluent (Section 4.0), sediment (Section 5.0), and air (Section 6.0). Section 7.0 provides a review and summary of the various programs and reporting requirements.

The CIP (Attachment E) documents how DOE will ensure that the public has appropriate opportunities for involvement in site-related decisions, including site controls, management, and monitoring.

1.3 Definition and Purpose of Institutional Controls

Institutional controls are important to help minimize the potential for exposure to, and the release of, residual contaminants, ensuring the protection of human health and the environment. Institutional controls are also important in helping to protect engineered remedies, by providing a means to ensure that the remedy remains effective, is not showing signs of failure, or is not being vandalized or damaged by outside elements (natural or human) in any way. (Section 1.4 describes the types of institutional controls at the site.)

EPA, in *Institutional Controls: A Site Manager's Guide to Identifying, Evaluating, and Selecting Institutional Controls at Superfund and RCRA Corrective Action Cleanups* (EPA 2000), has defined institutional controls as administrative or legal controls (i.e., non-engineered) that help to minimize the potential for human exposure to contamination or protect the integrity of a remedy. Institutional controls work by limiting land or resource use by providing information to modify or guide human behavior at the site.

DOE has defined institutional controls as mechanisms designed to appropriately limit access to or uses of land and facilities, to protect cultural and natural resources, to maintain the physical security of DOE facilities, and to prevent or limit inadvertent human and environmental exposure to residual contaminants. Institutional controls include methods to preserve knowledge and to inform current and future generations of hazards and risks (DOE 2000).

Although the DOE and EPA definitions differ slightly—DOE includes physical controls, such as fences and gates, as institutional controls—they both focus on the same goal: to protect human health and the environment from residual hazards.

1.4 Types of Institutional Controls

The types of institutional controls being used at the Fernald Preserve during legacy management, which are outlined in this plan, serve two functions: (1) to eliminate the disturbance and monitor the use of the Fernald Preserve, and (2) to minimize human and environmental exposure to residual contaminants, as described below. The site was divided into two subsections for institutional control purposes: the Fernald Preserve and the OSDF. The OSDF includes the disposal facility and its buffer area. This area is enclosed by a fence and locked at all times, unless authorized personnel require access. The Fernald Preserve is all of the remaining property on site.

The Fernald Preserve is accessible to employees and the escorted public, having only very small, fenced-off, restricted areas. Currently there is no unescorted public access at the Fernald Preserve. When the Visitors Center opens in 2008, it is anticipated that unescorted public access will be limited to the Visitors Center and associated trails and overlooks. The two sections of the site are treated separately because of the greater restrictions that apply to the OSDF.

- **Controls to Eliminate Disturbance and Monitor Use of the Fernald Preserve (Section 2.0)**—Describes institutional controls, applicable to both the Fernald Preserve and the OSDF, that are designed to limit access and land use. These controls focus on ensuring that the Fernald Preserve remains in a configuration consistent with the designated land use and that unauthorized uses of the Fernald Preserve do not occur. These include proprietary controls; governmental controls; and the prevention of unauthorized use by means of informational devices, security, physical barriers, and routine inspections. As part of the informational devices, a Visitors Center to house site information is being established. Also discussed are the methods of controlling, restricting, or prohibiting recreational activities. (Refer to Table 1–1 and Table 1–2 for a summary of these controls.)
- **Controls to Minimize Human and Environmental Exposure to Residual Contaminants (Section 3.0)**—Describes the institutional controls (i.e., monitoring and sampling) used to ensure the continued protection of human health and the environment. These controls focus on maintaining engineered systems and infrastructure that are designed to protect human health and the environment. This category also includes the use of the Visitors Center to provide educational information on the site remedy and measures required to monitor and maintain the remedy. These include routine inspections, permits, continuing groundwater remedial activities, routine maintenance and monitoring, and leachate management practices.

1.5 Agency Requirements for Institutional Controls

The need for institutional controls is described in the OU2 and OU5 RODs (Appendix B). On page 9–16, the OU5 ROD states: “One element of the selected remedy that will be used to ensure protectiveness is institutional controls, including continued access controls at the site during the remediation period, alternative water supplies to affected residential and industrial wells, continued federal ownership of the disposal facility and necessary buffer zones, and deed restrictions to preclude residential and agricultural uses of the remaining regions of the Fernald Environmental Management Project (FEMP) property.” The intent of the IC Plan is to describe the institutional controls, both physical and administrative, used at the Fernald Preserve. This IC Plan was submitted to EPA and OEPA under the OU5 ROD as a primary document and is part of the remedy for the Fernald Preserve.

Table 1–1. Controls on Disturbance and Use of the Fernald Preserve

Control	Requirement	Frequency	Scope
PROPRIETARY CONTROLS 1. Establish points of contact	1. DOE–LM guidance	1. Initially and when updates are needed	1. Provide primary and backup points of contact for emergencies. Points of contact will be updated in the Legacy Management Plan as needed. The DOE-LM 24-hour emergency line is 877-695-5322.
2. Ownership	2. OU2 ROD OU5 ROD DOE–LM guidance	2. N/A	2. The federal government will maintain ownership of site property. Management is the responsibility of DOE-LM.
GOVERNMENTAL CONTROLS 1. Notations on land records or real estate restrictive license	1. OU2 ROD OU5 ROD	1. Annual verification	1. If management of portions of the Fernald Preserve (outside of the disposal facility area) is transferred to another federal entity at any time, all zoning and real estate restrictions will be communicated to the appropriate parties, and proper notifications will be provided as required.
PREVENTING UNAUTHORIZED USE OF THE FERNALD PRESERVE 1. Informational devices	1. OU2 ROD OU5 ROD	1. N/A	1. Informational devices <ul style="list-style-type: none"> • A Visitors Center will provide information on site remediation, site restrictions, ongoing maintenance and monitoring, and residual risks. • In order to maintain the integrity of the site, access may need to be limited or restricted in some areas. Signs indicating restricted access will require monitoring and maintenance to ensure their legibility and integrity.
2. Security of the site	2. OU2 ROD OU5 ROD	2. Daily	2. Security <ul style="list-style-type: none"> • There will be routine patrols of the Fernald Preserve and perimeter postings to prevent unauthorized access and use of the site. • Site facilities and structures will be locked when personnel are not present during nonbusiness hours. • Some site facilities and structures will be fenced and locked at all times, and only authorized access will be permitted.
3. Routine site inspections	3. OU2 ROD OU5 ROD	3. Annually	3. Formal inspections will be conducted to ensure that infrastructure, signs and postings, fences and gates, perimeter areas, and access points are in a secure and safe configuration per the Fernald Preserve Area Post-Closure Inspection Checklist (refer to Appendix D).

Table 1–2. Controls on Disturbance and Use of the On-Site Disposal Facility

Control	Requirement	Frequency	Scope
PROPRIETARY CONTROLS 1. Establish points of contact	1. OAC 3745-27-11(B)(3) OAC 3745-66-18(c)(3) OAC 3745-68-10 40 CFR Sec. 258.61(c)(2) 40 CFR Sec. 265.118(c)(3) 40 CFR Sec. 264.118(b)(3)	1. Initially and when updates are needed	1. Provide primary and backup points of contact to ensure authorized and emergency access. Points of contact are provided in Table 4–2 of the PCCIP. Updates will be provided as needed. The DOE-LM 24-hour emergency number is 877-695-5322.
2. Ownership	2. OU2 ROD OU5 ROD	2. N/A	2. The federal government will maintain property ownership of the area comprising the OSDF and associated buffer areas. Management is the responsibility of the DOE-LM.
GOVERNMENTAL CONTROLS 1. Notations on land records or real estate restrictive license	1. OU2 ROD OU5 ROD	1. Annual review	1. If in place, annually verify that real estate restrictions are still in place. Restrictions will be provided in the deed, and proper notifications will be provided as required.
PREVENTING UNAUTHORIZED ACCESS TO THE OSDF 1. Informational devices	1. OU2 ROD	1. N/A	1. Signs and postings include information on restrictions, access information, contact information, and emergency information.
2. Engineered barriers	2. OU2 ROD	2. N/A	2. Access to the OSDF is physically restricted by means of fences, gates, and locks.
3. Routine OSDF inspections	3. OU2 ROD OU5 ROD	3. Quarterly	3. Inspect the OSDF as specified in the PCCIP.

1.6 Updates to the Institutional Controls Plan

The future LMICP schedule will be as follows:

- Each June, the annual site environmental reports will be submitted. They will make recommendations based on the previous year's monitoring information.
- Each October, an annual review of the LMICP will be submitted. It will identify updates as necessary.
- Each January, the document will be finalized to correspond with the monitoring and reporting schedule.

Upon EPA and OEPA approval, it is anticipated that the LMICP will be finalized by January each year to correspond with calendar-year monitoring and reporting. Between October and January, EPA and OEPA comments will be addressed.

2.0 Controls to Eliminate Disturbance and Monitor Use of the Fernald Preserve

2.1 Fernald Preserve

The primary institutional controls for the disturbance and use of the Fernald Preserve include continued federal ownership, real estate restrictions (if necessary), and using access controls and inspections to prevent the unauthorized use of the Fernald Preserve. The institutional controls for the disturbance and use of the Fernald Preserve are summarized in Table 1–1.

2.1.1 Proprietary Controls and Points of Contact

Proprietary controls are those controls that originate from the responsibilities associated with the ownership of property. These controls are established to ensure that the Fernald Preserve remains in a configuration consistent with the designated land use and that unauthorized uses do not occur. In the case of the Fernald Preserve, the federal government will maintain ownership, as stated in the OU2 ROD (DOE 1995). Primary and secondary points of contact have been established for emergency purposes, to ensure authorized access, and to ensure open communication (Appendix C). If an on-site emergency occurs, if unacceptable behavior is observed, or if someone has questions, the points of contact should be contacted.

The actions listed below are prohibited to ensure the ongoing protection of the site and for anyone using the site. Prohibited actions will be clearly posted at site access points. The following list applies to all unauthorized personnel:

- No alcohol or illegal drugs.
- No firearms.
- No removal or intentional damage of plants.
- No mushroom gathering.
- No soil excavation.
- No removal or intentional damage of archaeological materials (as defined in the Archaeological Resources Protection Act).
- No swimming or wading.
- No camping.
- No hunting, trapping, or fishing.
- No dumping.
- No smoking in prohibited areas, fires, or other open flames.
- No tampering, manipulating, or damaging of structures, fences, signs, water control devices, or other federal property.
- No deviation from designated roadways.

An interim residual risk assessment was performed to evaluate post-closure risks associated with the Fernald Preserve. The risk assessment was carried out in two phases. Phase I focused on the development of a geographic-information-system-based risk assessment tool to evaluate the final land use receptors identified in the OU5 ROD (i.e., undeveloped park user, expanded trespasser, and off-site farm resident) using certification data available in early 2006. This phase was completed in early 2007, and subsequent planning activities determined that there was no long-term need to maintain this tool for future risk assessment work. Phase II produced the *Interim Residual Risk Assessment Report*, which was released as Revision 1 in July 2007 (DOE 2007). This report demonstrates that the incremental lifetime cancer risk to seven receptors (undeveloped park user, museum visitor, museum worker, groundskeeper, building maintenance personnel, and construction workers) that visit or work at the site is less than 1E-04 lifetime cancers, which is consistent with CERCLA guidance. The receptors are exposed to residual contamination in the air, soil, and surface-water pathways. Food and groundwater pathways will be evaluated after the completion and certification of the groundwater remedial actions.

Land use restrictions may be modified or terminated in consultation with EPA and OEPA.

2.1.2 Governmental Controls

A part of the governmental controls at the Fernald Preserve will be the use of real estate notations and restrictions, should they become necessary (i.e., another organization would have the responsibility of managing the property). Notations on land records or similar restrictive real estate licenses will be in place for the Fernald Preserve and off-site property that is impacted by Fernald Preserve activities. DOE-LM will ensure that real estate notations remain in place as long as they are needed. In addition, if the management of any part of the site should be transferred from DOE to another federal entity, DOE will ensure that the controls remain in place. Per the OU2 and OU5 RODs, DOE-LM will annually review deed restrictions, if implemented, to ensure that they remain in effect with the local authorities. A review of notations or real estate restrictions and other institutional controls will also be part of the CERCLA 5-year review process.

In the event that DOE leases or transfers the management of the property to an entity other than DOE, the appropriate regulatory approvals will be secured, and restrictions and limitations will be communicated and implemented (e.g., zoning restrictions). In such cases, DOE will work with the agency to ensure that institutional controls for the active site will remain effective. This may be documented in a memorandum of understanding or other appropriate instrument. A description of the various types of institutional controls pertaining to the ownership or transfer of DOE land is included in the *Institutional Controls in RCRA and CERCLA Response Actions at Department of Energy Facilities* (DOE 2000).

2.1.3 Preventing Unauthorized Use of the Fernald Preserve

2.1.3.1 Informational Devices

The “No Trespassing” signs that are currently posted along the perimeter of the Fernald Preserve will remain to discourage access to the site at locations other than designated access points. These signs state the following:

No Trespassing by Order of the United States Department of Energy

The unauthorized entry upon any facility, installation, or real property subject to the jurisdiction, administration, or in the custody of the Department of Energy, which has been designated as a subject to the provisions contained in Title 10, Code of Federal Regulations (CFR), Part 860, is prohibited. The unauthorized carrying, transporting, or otherwise introducing or causing to be introduced, any dangerous weapon, explosive or other dangerous instrument or material likely to produce substantial injury or damage to persons or property, into or upon such facility, installation or real property is likewise prohibited.

Whoever willfully violates these regulations, shall, upon conviction, be punishable by a fine of not more than \$5,000. Whoever willfully violates these regulations with respect to any facility, installation, or real property enclosed by a fence, wall, floor, roof, or other structural barrier, shall be guilty of a misdemeanor and, upon conviction, shall be punished by a fine not to exceed \$100,000 or imprisonment for not more than one year, or both. (Title 42, United States Code § 2278; Title 18, United States Code § 3571)

By authority of Section 229 of the Atomic Energy Act of 1954, as amended (Title 42, United States Code § 2278(a)) and Title 10, CFR, Part 860 of the rules and regulations of the Department of Energy, this facility, installation, or real property has been designated as subject to these regulations by the United States Department of Energy. Trespassers may be subject to the provisions stated above.

Final site configuration includes postings at access points and other strategic locations indicating prohibited activities and site contact information. The same applies to the OSDF restricted area, the CAWWT, and fenced extraction wells (Figure 2).

DOE will establish a Visitors Center on site in the former Silos Warehouse, which will be refurbished. The Visitors Center is expected to be completed in June 2008. It will contain information on and context for the remediation of the Fernald Preserve, including information on site restrictions, ongoing maintenance and monitoring, and residual risks. The Visitors Center will also house computers (so that visitors may access electronic copies of documents and records), a meeting place, and other educational information as appropriate. A primary goal of the Visitors Center is to fulfill an informational and educational function within the community. The information in the Visitors Center will serve as an institutional control, make visitors aware of the Fernald Preserve's history and condition, and help prevent unsafe disturbances and uses of the site.

The Visitors Center will be maintained and operated under the direction of DOE-LM. With stakeholder input, DOE will periodically evaluate the use of the Visitors Center and the programming provided there. The conceptual design of the Visitors Center was completed by the University of Cincinnati, with input from stakeholders. Upon the completion of the Visitors Center, DOE will obtain stakeholder input on decisions regarding changes to the Visitors Center or its ongoing operation.

Realizing that certain structures needed to remain at the Fernald Preserve to support the continued management of the site, DOE reconciled the OU 3 ROD via a fact sheet (DOE 2006e).

The structures subject to the OU3 ROD reconciliation were those that were present solely to support the legacy management of the site. There are other facilities at the site, under the authority of OU5, that are required for the continued implementation of the ongoing groundwater remedy, the maintenance of the OSDF, and environmental monitoring.

2.1.3.2 Security of Site Facilities and Infrastructure

During nonbusiness hours, site facilities and structures will be locked when personnel are not present. A gate installed at the main site access location, the south Willey Road Entrance, will be locked during nonbusiness hours. Other access points (for example, those along Paddys Run Road) are protected with access controls consisting of cables mounted on posts. Some site infrastructure, such as the OSDF restricted area, the CAWWT, and unhoused extraction wells, have fences constructed around them and will remain locked to prevent unauthorized access. Controls also include enforcing the land use restrictions, maintaining fences and other infrastructure (as needed), and replacing or updating postings as needed to ensure the site's security (Figure 2).

An on-site DOE-LM presence is responsible for routine patrols and inspections of the Fernald Preserve. The patrols will ensure that no unauthorized use of the site is occurring and that facilities and structures are secure. Any unauthorized activity should be reported to the site contact immediately (Appendix C).

The public also plays a role in ensuring the security and safety of the site. As a result of the presence of an on-site Visitors Center (see Section 2.1.3.1), there will be community traffic and a public presence on the site. The final site configuration includes postings at access points and other strategic locations (visible to the public), containing contact information; members of the community may call any time they notice anything out of the ordinary or suspicious, or if they just have questions.

2.1.3.3 Routine Inspection of Property

In 2007, formal inspections of site property and infrastructure were conducted quarterly. In general, this process provided an effective means of ensuring that institutional controls were in place. However, depending on the time of year, some portions of the site are difficult to access due to vegetation, water, and the like. Therefore, inspections will take place when areas are accessible. All portions of the Fernald Preserve will be inspected annually. Area-specific walkthroughs will occur on a more frequent basis as activities (e.g., maintenance projects, ecological monitoring) warrant. Results of the annual site inspection will be included in an appendix to the *Annual Site Environmental Report*.

The formal site inspections include such things as fences; signs and postings; roadways and pathways; general interior, restored, and perimeter areas of the property; and access points (Figure 2). Also included in the inspections are the CAWWT and the groundwater restoration system (details are included in Attachment A). Grating that was installed to prevent access to the 60-inch Main Drainage Corridor culvert will be inspected as well. This culvert, along with an adjacent 18-inch culvert that is completely buried, has remained in place even though it has fixed radiological contamination. These culverts are located directly below the OSDF leachate

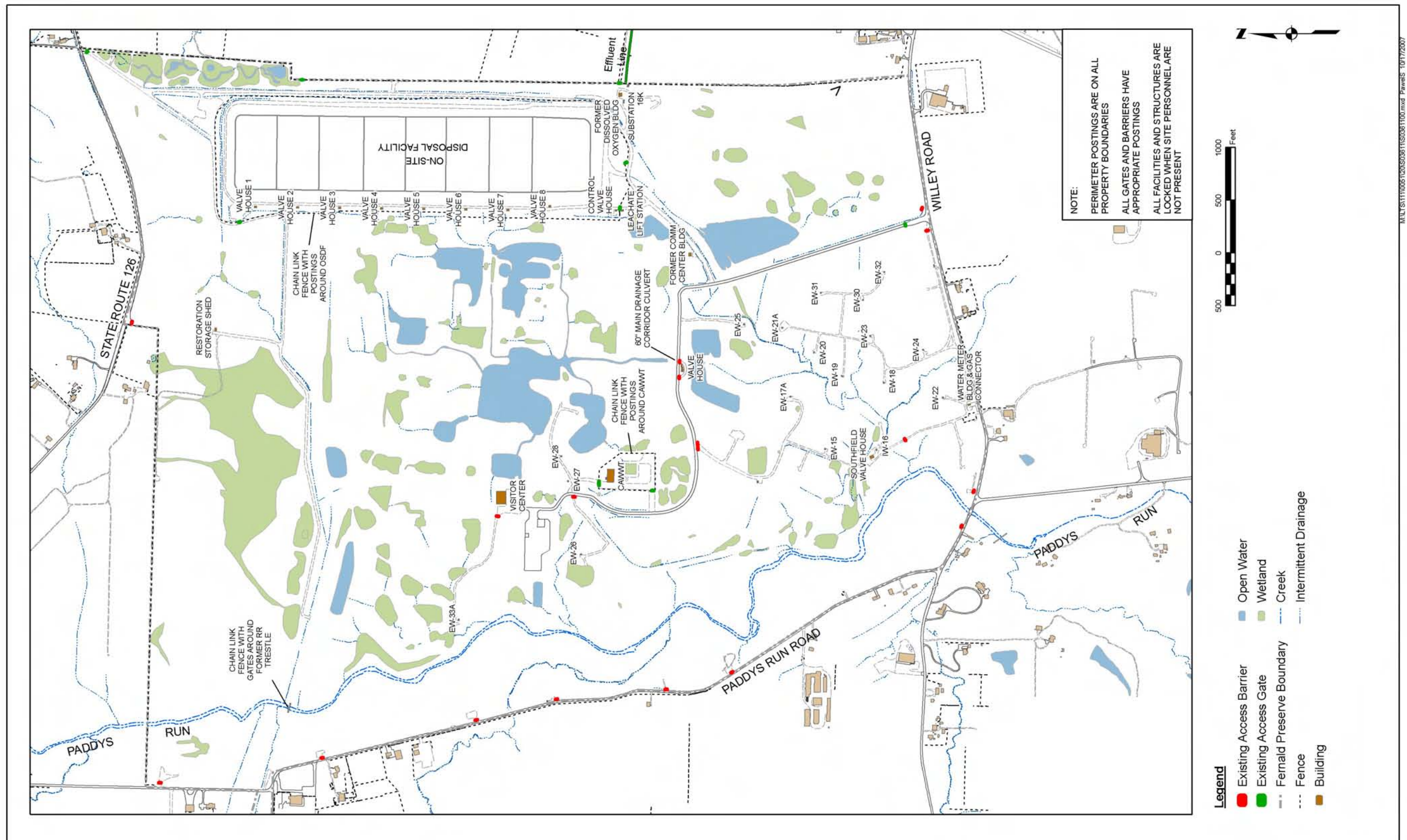


Figure 2. Fernald Preserve Site Configuration

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conveyance system and the main effluent line running between the CAWWT and the Great Miami River. Due to their location, these culverts could not have been removed without potentially impacting ongoing CAWWT and OSDF operations. Instead, metal grating was installed to prevent access to the 60-inch culvert. Site inspections will ensure that the 60-inch culvert grating is in place and is serviceable, and that the 18-inch culvert is not exposed through erosion or other ground disturbance. The fact sheet identifying clean buildings and structures for beneficial reuse under legacy management provides additional information regarding these culverts (DOE 2006e).

The attached example inspection checklist (Appendix D) outlines important components of all inspections for the Fernald Preserve (all areas outside the OSDF). The inspections focus on essential parameters to ensure that the primary institutional controls for the Fernald Preserve are being maintained. The inspections also include ensuring that prohibited activities are not taking place on site and that restrictions are being adhered to. Consultation with the public, regulatory agencies, local emergency-response personnel, and other key stakeholders is also part of the annual inspections.

DOE has a voting membership with the Ohio Utility Protection Service. With this membership, DOE will be notified any time an entity will be digging within a quarter of a mile of the site. DOE will then be able to contact the contractor or company doing the work to ensure that they are not impacting the Fernald Preserve property.

DOE-LM has an on-site manager who is responsible for the management and monitoring of the site post-closure, along with other duties. The manager's duties include managing the organization and conducting formal inspections of site property. DOE-LM exercises a portion of this responsibility through various subcontracts.

2.1.4 OSDF

The primary institutional controls for the disturbance and use of the OSDF include continued federal ownership, real estate restrictions (if necessary), and the prevention of unauthorized use of the OSDF and its associated buffer area. Engineered barriers, such as fencing, gates, and locks, are also important institutional controls (Figure 2). The institutional controls for the OSDF are summarized in Table 1–2. The table includes descriptions of the institutional controls, places where the institutional controls are referred to, and the requirements that drive the institutional controls. Primary and secondary points of contact have been established for emergency purposes, to ensure authorized access, and to ensure open communication (Appendix C). The OSDF will continue to be inspected quarterly, as specified in the PCCIP.

2.1.5 Proprietary Controls and Points of Contact

Proprietary controls are those controls that originate from the responsibilities associated with the ownership of property. The first is that the federal government will maintain ownership of the OSDF property in perpetuity, as stated in the OU2 ROD. The management of the OSDF (along with the management of the Fernald Preserve) transferred from DOE-EM to DOE-LM, but the OSDF and the site will always remain under federal ownership. The second is that primary and secondary points of contact have been established for emergency purposes, to ensure authorized access, and to ensure open communication.

2.1.6 Governmental Controls

A fundamental part of governmental controls will be the use of real estate notations and restrictions. Notations on land records or similar restrictive real estate licenses are in place for the land occupied by the OSDF. DOE-LM will ensure that real estate notations remain in place. DOE will also maintain the responsibility to manage and maintain the OSDF and all other activities needed to ensure that remedies remain effective. Any contract support required to implement specific aspects of maintenance and monitoring will be made aware of all restrictions regarding the use and disturbance of the OSDF.

2.1.7 Preventing Unauthorized Use

Physical barriers to restrict access to the OSDF and its surrounding buffer area include exclusion fencing, gates, and locks, which will be maintained. Signs and postings include information on restrictions, access information, contact information, and emergency information (Figure 2). Weather-resistant signs around the OSDF say the following:

CAUTION,
Underground Radioactive Material,
Contact Site Manager Prior to Entry
513-910-6107

Signs on the access gates to the OSDF contain slightly different information. The gate signs contain the following information:

- The name of the site.
- The international symbol indicating the presence of radioactive material.
- A notice that trespassing is forbidden on this U.S. government-owned site.
- A local DOE telephone number and a 24-hour DOE emergency telephone number; this telephone number will be recorded in agreement with local agencies to notify DOE in the event of an emergency or breach of site security or integrity.

The final configuration of the OSDF includes monuments installed at the corners of the engineered disposal facility, and markers placed on the top and the east and west toes of the cell caps (indicating the boundaries between the cells). The corner monuments consist of concrete cylinders 12 inches in diameter and 48 inches long. They are installed to a depth of 42 inches, with 6 inches of concrete remaining above the surface. A brass plate with pertinent identification and location information is flush-mounted to the top surface of the concrete. The individual cell markers are brass plates with pertinent identification and location information attached to a brass rod and flush-mounted to the ground surface.

3.0 Controls to Minimize Human and Environmental Exposure to Residual Contaminants

3.1 Fernald Preserve

The preliminary interim residual risk assessment performed for the second CERCLA 5-year review of the Fernald Preserve showed that residual constituents remain protective of human health and the environment. Section 6.4.4, “Review of Post-Remedial Action Contaminant Toxicity Assumptions,” in the *Second Five-Year Review Report for the Fernald Closure Project* (DOE 2006a) explains the assessment process for residual constituents. Table 6–3, “Comparison of the CRARE and Present Risk for All Pathways,” illustrates that the risks are below CERCLA limits. This preliminary interim residual risk assessment has been replaced by the final *Interim Residual Risk Assessment Report* (DOE 2007) as discussed in Section 2.0.

Institutional controls have been established for the Fernald Preserve to minimize the potential for human and environmental exposure to residual contaminants, ensuring that it is below acceptable limits. These controls include the inspection and maintenance of engineered systems and infrastructure designed to protect human health and the environment, and monitoring and sampling to ensure continued protection from exposure. Additional information about these controls can be found below and in Table 3–1.

3.1.1 Fernald Preserve Inspections

In 2007, DOE conducted formal quarterly inspections of the Fernald Preserve to ensure that institutional controls were being maintained and were functioning as intended, and that there were no activities being conducted on site that would pose a threat to human health or the environment, including any prohibited activities (Section 2.1.1). After a year, the frequency of the inspections was to be reevaluated. Beginning in 2008, the Fernald Preserve inspection will be conducted annually. Section 2.1.3.3 describes the inspection process for the Fernald Preserve in more detail.

A list of prohibited activities is posted at the primary site access points. Inspections of the area outside the OSDF will be performed per the Fernald Preserve Area Post-Closure Inspection Checklist (refer to the example in Appendix D) to ensure that there is no digging or soil removal of any kind (including wind or water erosion), and that infrastructure designed and in place for protecting against human exposure to contaminants, such as fences and signs, are in good condition and functioning as intended. Inspections also include the CAWWT, the groundwater restoration system, and the active outfall line. The inspection of the active outfall line includes ensuring sufficient soil coverage over the pipeline in an area where the soil is cultivated by a local farmer. A proper check of the soil cover on the outfall line involves locating the line in the area of concern (with surveying) and using of a hand probe to check the depth of the line to ensure that there are at least 30 inches of cover. The soil cover check will be completed annually in the fall, after the harvest. In the event there is insufficient soil cover over the pipeline, DOE will notify the landowner and the regulators. DOE will then take the necessary corrective actions, in consultation with the landowner. The inspection of uncertified areas (Volume I, Figure 3) includes ensuring that there is no digging or disturbance of the soils and no tampering with any signs that may be posted to define the areas. Grating that was installed to prevent access to

Table 3-1. Controls to Minimize Human and Environmental Exposure to Residual Contaminants at the Fernald Preserve

Control	Requirement	Frequency	Scope
FERNALD PRESERVE INSPECTIONS	OU2 ROD OU5 ROD	Annually. Frequency will be reevaluated through the CERCLA 5-year review process.	<p>Inspect infrastructure in place for the protection against human exposure to contaminants, such as fences and postings, to ensure their proper condition and function.</p> <ul style="list-style-type: none"> • Ensure that there is no removal of soil by wind or water erosion. Inspect water control structures, swales, and discharge points. • Inspect access control grating on the 60-inch Main Drainage Corridor culvert. • Conduct an inspection to ensure that prohibited activities, such as digging, off-road travel, camping, or hunting, are not taking place on site.
SURFACE WATER DISCHARGE INSPECTIONS	NPDES	Annually	<ul style="list-style-type: none"> • Inspect surface water drainages and discharge to ensure water is not being impacted by other means, and that drainages are functioning properly. • Discharge points to Paddys Run will be inspected for general water quality conditions (e.g., presence or absence of scum, foam, oil sheen, turbidity, color, other putrescent or unusual material). Up gradient drainage channels may be inspected for excessive erosion and obstructions. • Inspect active outfall line to ensure sufficient soil cover is present. • The Great Miami River will be inspected at the point of the Fernald Preserve discharge for the same general water quality conditions identified above.
GROUNDWATER REMEDY SAMPLING AND MONITORING	IEMP	Frequency of sampling and monitoring of groundwater is dependent upon the effectiveness of the remediation efforts and will vary over time.	<ul style="list-style-type: none"> • Monitor groundwater to ensure remedy is functioning properly until remedy certification is complete. Details are provided in the IEMP.

the 60-inch Main Drainage Corridor Culvert will be inspected as well. More frequent inspections may be required under certain circumstances (a pattern of unauthorized activities or uses). If warranted, more frequent inspections will be carried out to ensure that site restrictions are being maintained. Upon the completion of the Visitors Center, a workforce will be present on site daily. It will be part of the workforce's responsibilities to help ensure that prohibited activities are not taking place.

3.1.2 Surface Water Discharge

Until the groundwater remedy is complete, and as long as there is surface water discharge to the Great Miami River, a NPDES permit or similar permit mechanism needs to be in place. Monitoring and reporting to maintain compliance with the permit requirements will be part of post-closure responsibilities at the Fernald Preserve. Once there is no longer any surface water discharge to the river, the permit for surface water discharge may be closed out. Prior to the completion of the remedy, if it is decided that monitoring a particular outfall location is no longer necessary, DOE-LM may request that OEPA remove that particular location from the permit at that time. OEPA issues and maintains the NPDES permit.

3.1.3 Groundwater Remedy and Monitoring

The Institutional Controls to preclude the use of groundwater in the off-property area where groundwater contamination is greater than the 30 ppb uranium final remediation level consist of the following:

- The DOE funded public water system, which provided an alternate water supply for residents in the areas affected by groundwater contamination from the Fernald Preserve.
- The Hamilton County water well permitting process. Drinking water wells cannot be installed until a permit has been obtained from the Hamilton County Health Department. DOE will ensure that the Health Department is aware of the off-property areas where groundwater contamination is greater than 30 ppb uranium. DOE has sent a letter and map documenting the contaminated area to the Hamilton County Health Department and requested that no permits be issued in this area, given the contamination and the ongoing aquifer remediation (DOE 2006d). Additionally, the letter requests that DOE be notified of any proposed drilling activities in the vicinity of the plume. If DOE is made aware of any drilling activities in the area of the off-site plume, the regulators must be notified.
- Daily well field operational inspections and routine groundwater sampling. Operational personnel make daily rounds of the South Plume well field and will be instructed to notify management of any unusual activity in the area (e.g., well drilling). Groundwater sampling personnel will also be in the area of the South Plume for routine groundwater monitoring and will be instructed to notify management of any unusual activities.

Aquifer restoration operations and maintenance activities are part of an ongoing remedial action governed by the OU5 ROD. The requirements for the operations and maintenance activities are outlined in the OMMP (Attachment A). The OMMP, as originally written, defines the operating philosophy for the extraction and re-injection treatment systems (re-injection is not being used at this time), the establishment of operational constraints and conditions for given systems, and the establishment of the process for reporting and instituting corrective measures to address

exceedances in discharge limits. How to address exceptional operating conditions is also addressed.

Section 2.0 of the OMMP discusses the general commitments of the aquifer restoration. Provided are details regarding the aquifer cleanup levels, discharge limits, groundwater treatment capacity, groundwater treatment decisions, extraction rates, and injection rate and quality (although injection is no longer used). Section 3.0 of the OMMP goes into more specific detail about the design of the groundwater remediation systems, well field designs, and pump details. Section 4.0 discusses the projected flow during remediation activities. Section 5.0 discusses the Operations Plan, Section 6.0 discusses operations and maintenance, and Section 7.0 discusses roles and responsibilities. Sections 6.0 and 7.0 provide information that pertains directly to institutional controls.

Groundwater will be treated to help meet uranium discharge limits specified in the OU5 ROD until discharge limits can be achieved by blending untreated water alone. Eliminating groundwater treatment will not be pursued (1) at the expense of compromising mass removal or (2) if significant deviations from desired aggressive pumping rates are required. The CAWWT will undergo decontamination and demolition (D&D) once it has been documented to EPA and OEPA that the facility is no longer needed to meet uranium discharge limits.

When DOE has certified the groundwater remedy complete (which is defined in the Fernald Groundwater Certification Plan [DOE 2006b]) and EPA has approved it, well field infrastructure will be decommissioned and dispositioned. All needed soil excavation and certification associated with the D&D of the CAWWT and the removal of well field infrastructure will be in accordance with SEP (DOE 1998b) requirements.

Post-remedy long-term groundwater monitoring will be conducted. Requirements are defined in the Fernald Groundwater Certification Plan and will be implemented through the IEMP (Attachment D). Post-remedy long-term groundwater monitoring will be evaluated as part of the CERCLA 5-year reviews.

3.2 On-Site Disposal Facility

Institutional controls are necessary for the OSDF and its buffer area to ensure the prevention of human and environmental exposure to residual contaminants. Further information about these controls is given below and is included in Table 3–2. Details regarding OSDF inspection and maintenance are included in the PCCIP (Attachment B). The OSDF was constructed to permanently contain impacted materials derived from the remediation of the OUs at the Fernald Preserve. All material placed in the OSDF was required to meet pre-established WAC. The WAC are presented in Table 3–1 of the PCCIP. Table 3–2 of the PCCIP provides a description of the types of material or material categories that were allowed in the OSDF. The design and construction of the OSDF is described in Section 3.0. Section 4.0 of the PCCIP discusses the institutional controls for the OSDF, which have been included and summarized in this IC Plan. Table 4–1 of the PCCIP shows institutional controls for the OSDF as they were identified in the OU2 and OU5 RODs.

Table 3–2. Controls to Minimize Human and Environmental Exposure to Residual Contaminants at the On-Site Disposal Facility

Control	Reference	Requirement	Frequency	Scope
<p>OSDF INSPECTION AND MAINTENANCE</p> <p>1. Routine OSDF cap inspection</p>	1. PCCIP	<p>1. OAC 3745-66-18(A) and (C)</p> <p>40 CFR Sec. 264.118(b)(2)</p> <p>40 CFR Sec. 265.118(c)(2)</p> <p>OU5 ROD</p>	<p>1. Quarterly for two years following completion of cells 7 and 8.</p> <p>The monitoring schedule will be reevaluated after the 2 years of quarterly monitoring</p>	<p>1. Detect and record any change in the following:</p> <ul style="list-style-type: none"> • General health, density, and variety of vegetative cover. • Presence of deep-rooted woody species. • Evidence of burrowing animals on the cover. • Presence, depth, and extent of erosion or surface cracking, indicating possible cap deterioration. • Visibly noticeable subsidence, either locally or over a large area—any sufficient enough to pond water. • Presence and extent of any leachate seeps. • Integrity of run-on and runoff control features. • Integrity of benchmarks. <p>The process for contingency planning and notification is provided in Section 4.0.</p>
2. Unscheduled OSDF cap inspection	2. PCCIP	2. OU5 ROD	2. As needed	<p>2. Unscheduled inspections will be carried out as needed under specific circumstances (e.g., follow-up of maintenance, after significant natural events). Follow-up or contingency inspections will be conducted no more than 30 days after repair (refer to Section 4.0) to investigate and quantify specific problems encountered during a routine scheduled inspection, a special study, or another DOE or regulatory agency activity. Follow-up inspections determine whether the cover/cap stability is threatened and evaluate the need for maintenance, repairs, or corrective actions. Contingency inspections may be situation-unique inspections ordered by DOE or regulatory agencies.</p>

Table 3-2. Controls to Minimize Human and Environmental Exposure to Residual Contaminants at the On-Site Disposal Facility (continued)

Control	Reference	Requirement	Frequency	Scope
3. Routine OSDF cap custodial and preventative maintenance	3. PCCIP	3. OAC 3745-66-18(A) and (C) 40 CFR Sec. 264.118(b)(2) 40 CFR Sec. 265.118(c)(2) OU5 ROD OU2 ROD	3. As needed	3. Routine custodial and preventative maintenance consists of the following: upkeep of the vegetative cover, general mowing, clearing of debris, removal of woody weeds and seedlings, reseedling.
4. Routine OSDF site area inspection	4. PCCIP	4. OAC 3745-66-18(A) and (C) 40 CFR Sec. 264.118(b)(2) 40 CFR Sec. 265.118(c)(2) OU5 ROD OU2 ROD	4. Quarterly for 2 years following completion of cells 7 and 8. The monitoring schedule will be reevaluated after the 2 years of quarterly monitoring.	4. Inspect the adjacent area within approximately 0.25 miles of the OSDF buffer area. Describe evidence of land use changes. <ul style="list-style-type: none"> Evaluate natural drainage courses in the immediate vicinity of the OSDF to determine whether there is a threat to the OSDF integrity. Walk approximately 1,000 feet of adjacent natural drainage courses and note unusual or changed sediment deposits, large debris accumulations, manmade or natural constrictions, and recent or potential channel changes. Evaluate and record the development of gullies. Evaluate growth of vegetation in channels. Determine the condition and required maintenance of on-property roads. Inspect and record the area adjacent to the OSDF for erosion channels, accumulations of sediment, evidence of seepage, and signs of animal or human intrusion.
5. Unscheduled OSDF site area inspection	5. PCCIP	5. OU5 ROD OU2 ROD	5. As needed	5. Investigate reports that site integrity may be compromised. Follow-up or contingency inspections will be conducted to investigate and quantify specific problems encountered during a routine scheduled inspection, special study, or other DOE or regulatory agency activity. Determine whether the support systems are threatened, and evaluate the need for maintenance, repairs, or corrective actions. Contingency inspections are situation-unique inspections ordered by DOE when it receives information indicating that site integrity has been or may be threatened.

Table 3–2. Controls to Minimize Human and Environmental Exposure to Residual Contaminants at the On-Site Disposal Facility (continued)

Control	Reference	Requirement	Frequency	Scope
6. Routine OSDF site area custodial and preventative maintenance	6. PCCIP	6. OAC 3745-66-18(A) and (C) 40 CFR Sec. 264.118(b)(2) 40 CFR Sec. 265.118(c)(2) OU5 ROD	6. As needed	6. <ul style="list-style-type: none"> Repair/replace fencing, gates, locks, and signs due to normal wear, severe weather conditions, or vandalism. Mow/clear undesired woody vegetation; reshape, reseed, and repair banks; unplug culverts; and clean out run-on/runoff diversion channels.
LEAK DETECTION/ LEACHATE MONITORING 1. OSDF leachate and environmental monitoring	1. GWLMP and IEMP	1. OAC 3745-27-6 OAC 3745-54-90 through 99 (applicable portions) ^a DOE 435.1	1. Varying frequencies depending on sampling stage (e.g., baseline)	1. <ul style="list-style-type: none"> A routine monitoring program will be maintained for four zones within and beneath the OSDF. These zones include the LCS, the LDS, perched water within the glacial overburden, and the Great Miami Aquifer (GWLMP Section 3.2.1). Samples from the four zones are being collected and analyzed as specified in the GWLMP. Environmental monitoring parameters and frequencies are identified in the IEMP.
LEACHATE MANAGEMENT	GWLMP	OU5 ROD GWLMP	As needed	Leachate will continue to be treated.

^aOAC 3745-54-90 through 99 are not applicable in entirety (refer to the OSDF GWLMP, Appendix A).

Section 5.0 of the PCCIP discusses environmental monitoring activities that are necessary to continue during the post-closure care period, including air monitoring, groundwater monitoring, and the monitoring of other media (e.g., surface water, vegetation). Section 6.0 addresses routine inspections, which are important institutional controls. Section 3.2.1 of this IC Plan addresses these inspections in detail. Also addressed in the PCCIP are unscheduled inspections (Section 7.0), custodial monitoring and contingency repairs (Section 8.0), and emergency notifications (Section 10.0).

3.2.1 OSDF Inspection and Maintenance

DOE will conduct inspections and maintenance on the cap and cover system. Inspections will be conducted on a quarterly basis for a period of 2 years following the completion of cells 7 and 8. The frequency of inspections will be re-evaluated following the two years of quarterly monitoring. Custodial and preventative maintenance and unscheduled inspections will be conducted as needed. Table 3–2 provides current details on the required inspections and maintenance.

Routine inspections include monitoring the health of the vegetative cover; the presence of deep-rooted woody species; the existence of burrowing animals; the extent of surface erosion or cracking; subsidence, if any; the extent of any leachate seeps; the integrity of runoff controls; and the integrity of benchmarks. It also includes evaluating the condition of physical access controls (fences, gates, locks, and signs); observing adjacent properties for evidence of land use changes; evaluating natural drainage courses in the immediate vicinity; and inspecting the general area for erosion, excess sediment, seepage, and signs of human or animal intrusion. If determined necessary or appropriate, the frequency of the routine inspections may be revised through the CERCLA 5-year reviews. More-frequent monitoring, due to changes in the cap or surrounding areas, is always a possibility; however a decrease in frequency would require discussion, review, and approval at the time of the 5-year review. Routine custodial maintenance includes the upkeep of the vegetative cover; general mowing; the clearing of debris and woody plants; and reseedling.

The monitoring and management of the OSDF vegetative cover will be carried out to optimize the establishment and continued growth of the native grass mix specified and seeded on the OSDF cap. Monitoring will consist of the collection of data to determine the percentage of native cover on the OSDF cap. Data collection on the Cell 1 cap occurred in summer 2005, the fourth growing season after seeding. On the remaining cell caps, data collection will first occur four years after the seeding of each cap. The schedule for the first round of data collection on each cap will be as follows: Cell 2 in 2007, Cell 3 in 2008, Cells 4 through 7 in 2009, and Cell 8 in 2010. A grid will be established on each cell cap. Data will be collected from random sampling locations within the grid. Data will be collected at each sampling location to determine the overall percentage of native cover for the cap. Data will be collected one time during each sampling event in late summer. The results of data collection will be issued by DOE-LM to the regulatory agencies as soon as practical after the data have been compiled and processed, but no later than October 15 of the collection year.

Routine management of the OSDF cap includes mowing and baling in the spring to control woody vegetation. Mowing and baling will occur on a 3-year rotation. Cells 1, 2, and 3 were mowed in 2007. Cells 4, 5, and 6 will be mowed in 2008, and Cells 7 and 8 will be mowed in 2009. Additional mowing may take place in order to manage weeds and promote native-grass

and forb establishment. In the event that the spring mowing is not possible, it will be postponed until the following fall. Baling of the cut grasses will remove thatch and promote prairie-grass growth. Selective herbicide will be used as needed to control invasive or nuisance plants that are identified on the cap. In order to maximize the growth of prairie grass, controlled burning of the cell cap would be the best management tool. Working with the community and regulators, DOE-LM will maintain the cap vegetation, including the possibility of burning to properly manage the selected seed mixture. Following the collection of data from the Cell 1 cap in the summer of 2005, a decision was made to mow the grass and reseed where necessary. Decisions regarding the management of the remaining cell caps will be made after percent-native-cover data is collected per the above schedule.

As stated above, the goal will be to optimize the establishment of native grasses on the OSDF cap. DOE and the regulatory agencies agree that the goal is not necessarily to establish a functioning prairie on the OSDF cap. Native grasses (e.g., Big Bluestem, Little Bluestem, Switch Grass) are more drought-tolerant than cool-season grasses and will provide additional stability due to their complex root structures. A pass/fail criterion will not be set for the performance of the native grasses on the OSDF cap. However, a goal of 50 percent native cover has been considered for restored prairies on the site and will be used as a goal for native grasses on the OSDF. If the concentration of native grasses remains at or above 50 percent, management and monitoring will continue as outlined above. If the concentration of native grasses falls below 50 percent, DOE-LM will work with the regulatory agencies to develop an appropriate plan to increase the concentration of native grasses. Steps taken may include, but are not limited to, selective reseedling, installing native grass plugs, increasing the use of selective herbicide, and further considering controlled burns on the cap, or some combination thereof. The requirement to maintain 90 percent cover at all times after seeding on the OSDF cap will remain unchanged to minimize cap erosion. The 90 percent cover requirement applies to all vegetation on the cap and is not specific to native grasses.

Unscheduled inspections will be conducted as needed if specific circumstances warrant. An example would include following up on the completion of a maintenance action or conducting a cap inspection after an unusually large storm event. Based on the results and determinations made from the inspections, DOE will take appropriate actions to address any identified problems.

The maintenance and monitoring of the general support systems for the OSDF will include ensuring that physical access controls and restrictions are maintained, conducting routine inspections of the OSDF and surrounding area, performing routine maintenance activities, and monitoring the environment. Table 3–1 provides additional information on the required monitoring and maintenance.

The federal government will remain the property owner, and access to the OSDF and associated buffer area will continue to be restricted in perpetuity by means of fences, gates, locks, and warning signs (Figure 2). Access will be limited to personnel conducting inspections, custodial maintenance, and corrective action, and will be authorized by the federal government only.

3.2.2 Leak Detection/Leachate Monitoring

Routine OSDF leak detection and leachate monitoring is currently governed by the GWLMP (Attachment C). Table 3–2 includes some of the details. Section 3.0 of the GWLMP provides the

regulatory analysis and strategy for the OSDF monitoring. The regulatory drivers come from the ARARs identified in the OU2, OU3, and OU5 RODs. Section 4.0 of the plan provides a significant amount of information on the OSDF leak detection monitoring program. The text includes the program elements, monitoring frequencies, selection of analytical parameters, and data evaluation. Section 5.0 is a discussion of the leachate management monitoring program. It covers the management approach and monitoring needs. Section 6.0 provides the reporting requirements, and notification and response actions for when flow in the leak detection system exceeds action levels, which could be an indication of a failure in the cap or liner and could pose a threat to human health or the environment. Table 6–1 of the GWLMP outlines these actions in detail.

3.2.3 Leachate Management

Also involved in the maintenance and monitoring of the OSDF system is the management of the leachate that enters the LCS. Additional information regarding leachate management is also found in Appendix D of the GWLMP. Leachate will be treated through the CAWWT until the CAWWT is no longer available (anticipate that the CAWWT will be required at least until the 2010–2011 timeframe). A passive leachate treatment system is an option after the CAWWT is no longer available. Long-term treatment needs for the OSDF leachate during the period after the CAWWT is decommissioned will be reevaluated in 2009 (prior to the shutdown and D&D of the CAWWT). It is anticipated that by 2009, approximately 3 years after the last cell is capped, the leachate flow will be stabilized at a low level, and the leachate chemistry will be stable and well defined. The quantity of leachate collected, treated, and discharged will continue to be documented. Leachate will be sampled and analyzed as specified in the OSDF GWLMP.

4.0 Contingency Planning

Site inspections, monitoring activities, and maintenance activities are designed to identify problems before they develop into a need for corrective action. In the unlikely case that a natural event, vandalism, or other event threatens the integrity or operation of the OSDF or remainder of the site, corrective actions will be carried out to mitigate the problem. In addition, DOE will evaluate the factors that caused the problem and ensure that the possibility of recurrence is minimized or avoided.

To the extent that contingency actions can be anticipated or planned, they have been, and will continue to be, incorporated into the LMICP or attached support plans. Unanticipated contingency actions will be subject to CERCLA processes prior to implementation. Stakeholders, regulatory agencies, and the public will be notified of any unanticipated contingency actions under CERCLA that have to be implemented.

4.1 Unacceptable Disturbances or Use

In the event that an unacceptable condition or disturbance occurs at the Fernald Preserve during legacy management, corrective actions will be employed, and appropriate notifications will occur. Unacceptable conditions regarding the disturbance or use of the Fernald Preserve may include unauthorized access to the site (e.g., off-road vehicles), attempts to use soil or water on the site in an inappropriate manner, attempts to access the OSDF, or damage to fencing, gates, or postings. Section 2.1.1 provides an extensive listing of those actions that are prohibited and apply to all unauthorized personnel. Unacceptable conditions related to exposure to residual contaminants could include damage or disruption to the OSDF or attempts to utilize groundwater still undergoing remediation.

Contingency inspections are unscheduled situation-unique inspections ordered by DOE when it receives information indicating that site integrity has been or may be threatened. Events that could trigger contingency inspections include severe vandalism, intrusion by humans or livestock, severe rainstorms, or unusual events of nature such as tornadoes or earthquakes. If any unacceptable activities were found to be occurring on site, DOE-LM would implement the appropriate corrective actions, both to repair damage, if required, and to prevent or reduce the chances of reoccurrence. Some of the possible corrective actions DOE-LM may consider are increasing the frequency of surveillances by site personnel, requesting patrols by local law enforcement personnel, adding surveillance cameras, evaluating and possibly revising current postings at the site, and prosecuting individuals caught engaging in prohibited, destructive, or disruptive behavior.

Events that have caused severe damage to the OSDF or that pose an immediate threat to human health and the environment will be immediately reported to EPA and OEPA. Detailed information regarding OSDF contingency inspections, corrective actions, and reporting are contained in Attachment B.

Minor maintenance actions such as seeding small areas, minor erosion repairs on the OSDF or other parts of the site, the replacement of postings and signs, minor fence and gate repairs, and minor maintenance of site infrastructure will not be subject to the notification process described

above. The need for minor maintenance will be identified on routine inspection forms issued to EPA and OEPA and will be subject to follow-up inspections as discussed above.

4.2 Contaminated Soil and/or Debris

In the event that suspect debris or small areas of isolated soil that could present radiological issues are discovered, DOE will isolate the area and begin investigative activities. A radiological control technician will conduct a scanning survey of the debris or soil. For debris, DOE-approved limits for contamination from residual radioactive material will be used to determine the proper disposal method. For soils, areas where instrument readings indicate a presence of uranium, thorium, or radium above a value corresponding to three times its FRL will be marked for additional investigation. Debris that does not meet the unrestricted release criteria and soils that exceed the cleanup criteria will be transported to an off-site disposal facility for disposal in accordance with the terms of the ACA and EPA's Off-site Rule. If unexpected large-scale soil contamination is identified, the protocol in the SEP (DOE 1998b) will be followed, which is the same protocol that will be used for the uncertified areas as described in Volume I, Section 2.4.4.

The disposal of any contaminated debris or soil will be handled on a case-by-case basis once adequate historical knowledge of the soil is compiled and any additional characterization is complete. Until then, temporary storage in covered stockpiles or drums (depending on volume) will be established, and a path forward through final disposition will be developed for review and approval by appropriate agencies as necessary.

Although not expected, any tagged Fernald property items or items suspected to be from Fernald that are found on site or off site are to be reported by calling either the Fernald Preserve manager at 513-910-6109 during business hours or the 24-hour DOE-LM emergency number at 877-695-5322.

4.3 Unexpected Cultural Resource Discoveries

Although limited excavation activities on the Fernald Preserve are expected to occur, there will be excavations associated with the Visitors Center construction, for erosion repair, and in the future when the time comes to remove the CAWWT and associated aquifer restoration infrastructure. If unexpected cultural resources are identified within an excavation, the site procedure for handling unexpected cultural resource discoveries will be followed. This includes isolating the affected area until the on-call subcontractor can perform the necessary investigation. This follows the same process used during remediation and restoration activities. DOE will continue to consult with the appropriate parties, such as the State of Ohio Historic Preservation Office, to determine an appropriate course of action as necessary.

4.4 Notification Process

Upon discovering any institutional control breaches, DOE-LM will notify EPA and OEPA of the breaches and of DOE's plan for correcting them. Stakeholder notifications will be handled as deemed appropriate by DOE. Any activity that is inconsistent with the institutional control objective or use restrictions will be addressed by DOE-LM as soon as practical, but in no case will the process be initiated later than 10 days after DOE-LM becomes aware of the violation.

DOE will notify EPA and OEPA regarding how it has addressed or will address the breach within 10 days of the initial notification. A follow-up inspection will occur within 30 days of the completion of any corrective action. The results of follow-up inspections will be provided to EPA and OEPA.

4.5 Coordination with Other Agencies

DOE-LM sent letters to the Hamilton County Sheriff's Department; the Butler County Sheriff's Department; and Ross, Crosby, and Morgan Township police and fire officials requesting that they notify DOE-LM in the event they observe any unauthorized human intrusion or unusual natural event.

DOE-LM sent a letter to the Ohio Earthquake Information Center, located at Alum Creek State Park in Delaware County, Ohio, requesting that they notify DOE-LM in the event of an earthquake in the vicinity of the Fernald Preserve.

DOE-LM will monitor emergency weather notification system announcements and has requested notification from the National Weather Service (either Wilmington or Cincinnati) of severe weather alerts.

To notify DOE-LM of site concerns, the public may use the 24-hour security telephone numbers monitored at the DOE facility in Grand Junction, Colorado. The 24-hour security telephone numbers will be posted at site access points and other key locations on the site.

**THE 24-HOUR EMERGENCY NUMBER
877-695-5322**

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5.0 Information Management and Public Involvement

5.1 Information Management

The long-term retention of records and dissemination of information is another critical aspect of legacy management. DOE-LM will manage records that are needed for legacy management purposes. Records will be dispositioned in accordance with DOE requirements at the National Archives and Records Administration or a federal records center for their required retention period or destroyed once they have reached the required retention. Copies of selected records documenting past remedial activities (e.g., CERCLA Administrative Record [AR]) will be retained by DOE-LM for legacy management purposes on the site at the Visitors Center. In addition, newly acquired CERCLA AR records will be available to stakeholders.

DOE-LM will also manage any centralized system to provide stakeholders with access to information. Copies of selected information or data documenting past remedial activities (e.g., soil certification) and the design and contents of the OSDF will be retained and managed by DOE-LM for institutional control purposes. In addition, newly acquired information or data related to remedy performance will be readily available to stakeholders and the public. DOE-LM currently uses the Geospatial Environmental Mapping System, a Web-based application, to manage and provide stakeholders, the agencies, and the public with Internet access to electronic data.

Administrative Record documents for the Fernald Preserve have been scanned into industry-standard searchable Adobe Acrobat portable document file (PDF) format for viewing over the Internet. Document metadata is stored in a FileMaker Pro database. The database also contains pointers to the PDF images of the documents.

Features of the public-access website include a search engine that allows users to search by document number, document date, document type, document title, description, and site. Additionally, users can search for text contained within the document. Search results can be sorted by document number, document date, or document type. Document content is displayed using the Adobe Acrobat Reader software.

5.1.1 Fernald Preserve Data and Information

Inspection data will include information from inspections of the general site area, perimeter, access points, infrastructure, and signs and postings. The Fernald Preserve Area Post-Closure Inspection Checklist (Appendix D) will be used to collect the data and document the inspection.

The IEMP (Attachment D) defines environmental monitoring requirements for the Fernald Preserve. Monitoring data will include all environmental monitoring data associated with the site, including groundwater remediation data and ecological restoration monitoring data.

5.1.2 OSDF Data and Information

Inspection data will include information from inspections of the OSDF cap, infrastructure (e.g., LCS/LDS pipe networks), perimeter fencing, buffer area, and signs and postings. The

OSDF Cell Post-Closure Inspection Checklist (Appendix D) and the LCS/LDS Inspection Checklists will be used to collect the data and document the inspections.

Monitoring data will include the monitoring of the LCS, groundwater monitoring, and any other environmental monitoring data that pertains to the OSDF and its function.

5.1.3 Reporting

The annual site environmental report will continue to be submitted to EPA, OEPA, and the community on June 1 of each year. It will provide information on institutional controls, monitoring, maintenance, site inspections, and corrective actions while continuing to document the technical approach and summarizing the data for each environmental medium. It will also summarize CERCLA, Resource Conservation and Recovery Act (RCRA), and waste management activities. The report will include water quality and water accumulation rate data from the on-site disposal facility monitoring program. The summary report serves the needs of the regulatory agencies and other key stakeholders. The accompanying detailed appendixes of the site environmental report are intended for a more technical audience, including the regulatory agencies, and will serve to fulfill National Emissions Standards for Hazardous Air Pollutants reporting requirements, as necessary. Additionally, there will be continued reporting requirements, as required under other regulatory programs that will be addressed outside the annual site environmental reports (e.g., NPDES monthly discharge reports).

Once it is determined that the institutional controls are functioning, the remedy is performing as intended, and the groundwater remediation is effective, the reporting frequency may be reevaluated. In the event of unacceptable conditions or disturbance, more-frequent notification and reporting will be required as defined in Section 4.0.

Under CERCLA, a review of the remedy is required every 5 years at sites where the level of remaining contaminants limits site use. The CERCLA 5-year reviews at the Fernald Preserve will focus on the protectiveness of the remedies associated with each of the five OUs. Also included will be summaries of the inspections conducted for the OSDF, the CAWWT facility, the groundwater restoration system, and the active outfall line to the Great Miami River. To facilitate the review, a report addressing the ongoing protectiveness of the remedies will be prepared and will be submitted to the EPA and OEPA. The institutional controls portion of the report will include the data collected from monitoring and sampling, summaries of the inspections conducted of the Fernald Preserve and OSDF site and cap during the 5-year period, and a discussion of the institutional controls' effectiveness. If it is determined that a particular control is not meeting its objectives, then required corrective actions will be included. The review may lead to revisions to the monitoring and reporting protocols.

5.2 Public Involvement

The public played a very important role in the remediation process at the Fernald Preserve, and the community remains very involved in legacy management. DOE has written the CIP (Attachment E) to document how DOE will ensure the public's continued involvement in a wide variety of site-related decisions and activities, including post-closure monitoring. The CIP is a CERCLA-required document, replacing the current Community Relations Plan, also required under CERCLA. Although the CIP contains all of the requirements for public involvement under

CERCLA, it also includes DOE's policy for public involvement, which extends beyond CERCLA requirements. Therefore, the CIP clearly identifies those elements that are not enforceable.

5.2.1 Current Public Involvement via Groups and Organizations

Several groups followed the remediation and cleanup process at the Fernald Preserve, including the Fernald Citizens Advisory Board (FCAB), Fernald Residents for Environmental Safety and Health (FRESH), and the Fernald Living History Project. The FCAB was established to formulate cleanup policy and to help guide the cleanup activities at the site. Representatives, including local residents, governments, businesses, universities, and labor organizations, constituted the advisory board membership. In 1995, the FCAB issued recommendations to DOE on remedial action priorities, cleanup levels, waste disposition alternatives, and future uses for the Fernald Preserve property. The FCAB was actively involved in the final remediation and restoration activities for the Fernald Preserve, with monthly full-board meetings and meetings of the FCAB Stewardship Committee. DOE worked closely with the FCAB until September 2006, when the FCAB held its final meeting.

FRESH was formed by local residents in 1984 and has played an important role in providing community input on the characterization and remediation of the Fernald Preserve. The group held its final public meeting in November 2006, after 22 years of environmental activism.

The FCAB had cosponsored (along with FRESH, the Community Reuse Organization, and the Fernald Living History Project) four "Future of Fernald" workshops. The workshops were open to the public and gave the community input on the final public-use decisions as described in the Master Plan for Public Use of the FEMP (DOE 2002). The later workshops led to the recommendation of a Multi-use Education Facility at the site.

The Fernald Community Alliance, also known as Fernald Living History Inc., is dedicated to ensuring that the history of Fernald is available for future generations. The group remains active and is looking to expand its member base.

A list of other stakeholders considered to be critical for legacy management planning at the Fernald Preserve is given below. Additional stakeholders may be identified in the future.

- Local government and enforcement agencies.
- Local volunteer organizations.
- Local residents.
- Universities.
- Local school groups.
- Environmental organizations.
- Native American Tribes.
- Native American organizations.
- Natural Resource Trustees.
- Regulatory agencies.

- Fernald Community Alliance.
- Local Historical Societies.
- Local businesses.

5.2.2 Ongoing Decisions and Public Involvement

The regulatory requirements that drive legacy management activities at the Fernald Preserve will continue to be evaluated. A database developed by Florida International University (FIU 2002) is a starting point in the identification of applicable requirements, but additional review and decision making are still needed.

The Visitors Center is expected to be completed in June 2008. The design phase of the Visitors Center was completed in 2007 and included community involvement from the very beginning. In 2006, a faculty/student team from the University of Cincinnati (College of Design, Art, Architecture, and Planning [DAAP], Center for Design Research and Innovation) conducted a series of meetings with the community to produce a conceptual design for the reuse of an existing warehouse on the Fernald property. The plan for the new Visitors Center also included opportunities in landscape, sustainability, graphics, exhibits, branding, and delivering documentation of ideas suitable for transfer to a commercial architect-builder team for implementation.

From June to September 2007, a University of Cincinnati summer studio from DAAP worked to deliver a conceptual design specifically for the exhibits within the Fernald Preserve Visitors Center. Two subsequent presentations were given to the community with their final recommendations.

Input on future legacy management planning decisions will occur through formal document reviews, community meetings, roundtables, workshops, and other forums. Currently, DOE holds quarterly briefings for interested stakeholders. DOE anticipates continuing these updates using a similar forum/format throughout legacy management. The CIP (Attachment E) also discusses methods of reporting to the public.

Another process involving the public is the CERCLA 5-year review. The 5-year reviews are performed pursuant to CERCLA §121, “The National Contingency Plan” (40 CFR Part 300), and the Comprehensive 5-Year Review Guidance, June 2001. These regulations state that a public comment and review period will be provided so that interested persons may submit comments. Input from the public regarding the legacy management of the site and the ongoing groundwater remediation will always be considered, just as it had during the remediation of the site.

5.2.3 Public Access to Information

DOE-LM will continue to make available to the public documents pertaining to the Fernald Preserve. A public reading room is located at the Delta Building, 10995 Hamilton-Cleves Highway, Harrison, Ohio, 45030. Selected documents about the Fernald Preserve and public computer access will be available at the Fernald Preserve Visitors Center. The CERCLA AR will be available in both hard-copy and digitized formats.

AR documents for the Fernald closure site will be scanned into industry-standard searchable Adobe Acrobat PDF format for viewing over the Internet. Document metadata is stored in a FileMaker Pro database. The database also contains pointers to the PDF images of the documents.

Features of the public-access website include a search engine that allows users to search by document number, document date, document type, document title, description, and site. Additionally, users can search for text contained within the document. Search results can be sorted by document number, document date, or document type. Document content is displayed using the Adobe Acrobat Reader software. The CERCLA AR will be updated as new documents are created.

End of current text

6.0 References

40 CFR 300. “National Oil and Hazardous Substances Pollution Contingency Plan; Final Rule,” as presented in the *Federal Register*, Title 40, Volume 24, U.S. Environmental Protection Agency, *Code of Federal Regulations*, July 2001.

42 USC 103. “Comprehensive Environmental Response, Compensation, and Liability Act,” §121 et seq., as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), Pub. L. 99-499, United States Code, October 1986.

DOE (U.S. Department of Energy), 1995. *Final Record of Decision for Remedial Actions at Operable Unit 2*, 7021 U-004-501.3, Final, Fernald Environmental Management Project, DOE, Fernald Area Office, Cincinnati, Ohio, May.

DOE (U.S. Department of Energy), 1996. *Final Record of Decision for Remedial Actions at Operable Unit 5*, 7478 U-007-501.4, Final, Fernald Environmental Management Project, DOE, Fernald Area Office, Cincinnati, Ohio, January.

DOE (U.S. Department of Energy), 1998a. *Waste Acceptance Criteria Attainment Plan for the On-site Disposal Facility*, 20100-PL-0014, Revision 0, Final, Fernald Environmental Management Project, DOE, Fernald Area Office, Cincinnati, Ohio, June.

DOE (U.S. Department of Energy), 1998b. *Site-Wide Excavation Plan*, 2500-WP-0028, Revision 0, Fernald Environmental Management Project, DOE, Fernald Area Office, Cincinnati, Ohio, July.

DOE (U.S. Department of Energy), 2000. *Institutional Controls in RCRA and CERCLA Response Actions at Department of Energy Facilities*, DOE/EH-413-0004, DOE, Office of Environmental Policy and Guidance, August.

DOE (U.S. Department of Energy), 2001. *Explanation of Significant Differences for Operable Unit 5*, Final, Fernald Environmental Management Project, DOE, Fernald Area Office, Cincinnati, Ohio, October.

DOE (U.S. Department of Energy), 2002. *Master Plan for Public Use of the Fernald Environmental Management Project*, 20900-PL-0002, Revision A, Draft, Fluor Fernald, DOE, Fernald Area Office, Cincinnati, Ohio, February.

DOE (U.S. Department of Energy), 2006a. *Second Five-Year Review Report for the FCP*, 2500-RP-0044, Revision B, Draft, Fluor Fernald, DOE, Fernald Area Office, Cincinnati, Ohio, March.

DOE (U.S. Department of Energy), 2006b. *Fernald Groundwater Certification Plan*, Fluor Fernald, DOE Fernald Area Office, Cincinnati, Ohio, April.

DOE (U.S. Department of Energy), 2006c. *Fernald Project Health and Safety Plan*, DOE-LM/1324-2006, Revision 1, S.M. Stoller Corporation, Grand Junction, Colorado, September.

DOE (U.S. Department of Energy), 2006d. DOE-0184-06, Letter to Hamilton County General Health District, August.

DOE (U.S. Department of Energy), 2006e. *FACT SHEET: The Fernald Closure Project Identifies Clean Buildings, Critical Structures, and Construction Materials for Beneficial Reuse Under Legacy Management*, Fluor Fernald, DOE Fernald Area Office, Cincinnati, Ohio, December.

DOE (U.S. Department of Energy), 2007. *Interim Residual Risk Assessment Report*, Revision 1, S.M. Stoller, DOE, Fernald Area Office, Cincinnati, Ohio, July.

EPA (U.S. Environmental Protection Agency), 2000. *A Site Manager's Guide to Identifying, Evaluating, and Selecting Institutional Controls at Superfund and RCRA Corrective Action Cleanups*, EPA 540-F-00-005, OSWER 9355.0-784FS-P, EPA, Office of Solid Waste and Emergency Response, September.

EPA (U.S. Environmental Protection Agency), 2001. *Comprehensive Five-Year Review Guidance*, OSWER Directive 9355.7-03B-P, Office of Solid Waste and Emergency Response, EPA, June.

FIU (Florida International University), 2002. *2006 and Beyond: Defining Long-Term Stewardship Requirements at Fernald*, Florida International University, Miami, Florida, November.

Appendix A

Records of Decision and Associated Documents

Records of Decision and Associated Documents

Federal Facility Compliance Agreement	1986
Work Plan (identifies specific units of the site for RI/FS)	1988
Consent Agreement	1990
Amended Consent Agreement	1991
Record of Decision for Operable Unit 4	1994
Interim Record of Decision for Operable Unit 3	1994
Record of Decision for Operable Unit 1	1995
Record of Decision for Operable Unit 2	1995
Final Record of Decision for Operable Unit 3	1996
Record of Decision for Operable Unit 5	1996
Explanation of Significant Differences for Operable Unit 4 Silo 3 Recommendation that treatment of Silo 3 material be evaluated and implemented separately from treatment of Silos 1 and 2 material	1998
Final Record of Decision Amendment for Operable Unit 4 Silos 1 and 2	2000
Explanation of Significant Differences for Operable Unit 5 Resulted in change of FRL for uranium in groundwater from 20 ppb to 30 ppb	2001
Explanation of Significant Differences for Operable Unit 1 Recommendation for processing other FEMP waste streams through the Operable Unit 1 remediation facilities and processes	2002
Final Record of Decision Amendment for Operable Unit 1	2003
Final Record of Decision Amendment for Operable Unit 4 Silo 3	2003
Final Explanation of Significant Differences for Operable Unit 4 Silos 1 and 2	2003
Final Explanation of Significant Differences for Operable Unit 4	2005
Final Fact Sheet for Operable Unit 3	2006
Operable Unit 1 Final Remedial Action Report	2006
Operable Unit 2 Final Remedial Action Report	2006
Operable Unit 3 Final Remedial Action Report	2007

Operable Unit 4 Final Remedial Action Report	2006
Operable Unit 5 Interim Remedial Action Report	TBD
Preliminary Close Out Report (U.S. EPA Document)	2006

Appendix B

Institutional Control Records as Stated in the Records of Decision

Institutional Control Records as Stated in the Records of Decision

Operable Unit 2 Record of Decision (DOE 1995)

The selected remedy will include the following as institutional controls:

- Continued federal ownership of the OSDF site.
- OSDF access restrictions (fencing, gates, and warning signs) will be controlled by proper authorization and is anticipated to be limited to personnel for inspection, custodial maintenance, or corrective action.
- Restrictions on the use of property will be noted on the property deed before the property could be sold or transferred to another party.
- Groundwater monitoring following closure of the OSDF.

Operable Unit 5 Record of Decision (DOE 1996)

Long-term maintenance will be provided as part of the selected remedy. The selected remedy includes the following key components for institutional controls and monitoring:

- Continuation of access controls at the Fernald Preserve, as necessary, during the conduct of remedial actions. Property ownership will be maintained by the federal government and will comprise the disposal facility and associated buffer areas.
- Maintenance of remaining portions of the Fernald Preserve (outside the disposal facility area) under federal ownership or control (e.g., deed restrictions) to the extent necessary to ensure the continued protection of human health commensurate with the cleanup levels established by the remedy. If portions of the Fernald Preserve are transferred or sold at any future time, restrictions will be included in the deed, as necessary, and proper notifications will be provided as required by CERCLA. EPA must approve of all ICs, including types of restrictions and enforcement mechanisms, if the property is transferred or sold.
- Maintenance of the on-property disposal facility, to ensure its long-term performance and the continued protection of human health and the environment.
- An environmental monitoring program conducted during and following remedy implementation to assess the short- and long-term effectiveness of remedial actions.
- Provision of an alternative water supply to domestic, agricultural, and industrial users relying upon groundwater from the area of the aquifer exhibiting concentrations of contaminants exceeding the final remediation levels. The alternative water supply will be provided until such time as the area of the aquifer impacting the user is certified to have attained the final remediation levels.

End of current text

Appendix C

Fernald Preserve Contact Information

Fernald Preserve Contact Information

EMERGENCY CONTACT

Grand Junction 24-Hour Monitored Security Telephone Number
877-695-5322

Fernald Preserve Emergency Telephone Number
911 or 513-910-6107

Fernald OSDF Emergency Telephone Number
911 or 513-910-6107

OFFICE OF LEGACY MANAGEMENT–FERNALD

Site Manager

Jane Powell
Department of Energy
Office of Legacy Management
513-648-3148
jane.powell@lm.doe.gov

S.M. Stoller–Fernald

Site Manager

Frank Johnston
S.M. Stoller Corporation
513-648-5294
frank.johnston@lm.doe.gov

ENVIRONMENTAL AGENCIES

Remedial Project Manager

U.S. Environmental Protection Agency
Region V, SR-6J
77 West Jackson Boulevard
Chicago, Illinois 60604-3590
312-886-0992

Fernald Project Coordinator

Ohio Environmental Protection Agency
401 East Fifth Street
Dayton, Ohio 45402-2911
937-285-6357
www.epa.state.oh.us

U.S. Fish and Wildlife Service
Suite H
6950 American Parkway
Reynoldsburg, Ohio 43068

FERNALD PRESERVE COMMUNITY INVOLVEMENT COORDINATOR

Community Relations Specialist

Susan Walpole
S.M. Stoller, Corporation
513-648-4026

LOCAL POLICE AUTHORITY

Crosby Township/Hamilton County Police
Administration Office
513-825-1500

Morgan Township/Butler County Police
Administration Office
513-887-3010

Note: This information will be updated as necessary.

Appendix D

Example of OSDF and Fernald Preserve Inspection Forms

OSDF Cell Cap Post-Closure Inspection Checklist

Date of Inspection:

Weather Conditions:

Time of Inspection:

Inspection By:

Transect Direction**

Inspection Component	Condition of Each Cell Cap A* or U*								Comments	Addressed
	1	2	3	4	5	6	7	8		
1. Entrance Road/Monitoring Access Road										
1A. Verify that entrance gate, lock, and signage are intact and in good working order.										
1B. Verify that access gates are locked to prevent unauthorized entry.										
1C. Visually observe condition of access road for signs of erosion, ruts, standing water, proper drainage, and excess vegetation.										
1D. Verify that access road surfacing, cross slope, reflectors, and signage are intact and in good condition.										
2. Chain-Link Fence and Signage										
2A. Walk length of fence and ensure that fence, posts, etc., are intact and in good condition. Ensure that gates are closed/locked to prevent unauthorized entry.										
2B. Verify that the proper signage is intact and in good condition.										
2C. Check for vegetation growing over fences, barricades, and signs; any noxious vegetation per State of Ohio regulations; and invasive plants growing on or around OSDF perimeter.										
3. Surface Water Management										
3A. Check integrity of drainage channels around OSDF for erosion or debris restricting water flow (see attached map). Build up of debris/sedimentation in drainage ditch is not to exceed 6 in.										
3B. Visually check the integrity of riprap in drainage channels for signs of deterioration or removal of rock.										
3C. Visually check for the presence of woody vegetation growing in drainage channels and in riprap										
3D. Visually check the integrity of run-on- and runoff-control features, including ditch checks, gravity inlet structures, and culverts.										

* **A** = Satisfactory; **U** = Unsatisfactory (comments required)

** Transect direction should alternate each inspection (north to south and east to west)

OSDF Cell Cap Post-Closure Inspection Checklist

Date of Inspection:

Weather Conditions:

Time of Inspection:

Inspection By:

Transect Direction**

Inspection Component	Condition of Each Cell Cap A* or U*								Comments	Addressed
	1	2	3	4	5	6	7	8		
4. Final Cover										
4A. Walk cover and side slopes in 25-ft (±5-ft) transects, and visually inspect for the following items:**										
4A1. Erosion rills/channels greater than 3 in wide and 6 in deep or excessive erosion.										
4A2. Observable depressions, settlement/subsidence, slumping or desiccation cracks.										
4A3. Ponding or standing water.										
4A4. Evidence of burrowing animals or other bio-intrusion.										
4A5. Evidence of vehicle traffic on the OSDF cap.										
4B. Walk toe of slope and visually inspect for the following:										
4B1. Evidence of settlement/subsidence, erosion, and seepage.										
4B2. A 20-ft corridor at the toe for the presence of woody vegetation, siltation, and/or biointrusion.										
4B3. Any observable abnormalities in the riprap.										
4C. Inspect toe at final cover for evidence of freezing or siltation.										

* **A** = Satisfactory; **U** = Unsatisfactory (comments required)

** Transect direction should alternate each inspection (north to south and east to west)

OSDF Cell Cap Post-Closure Inspection Checklist

Date of Inspection:

Weather Conditions:

Time of Inspection:

Inspection By:

Transect Direction**

Inspection Component	Condition of Each Cell Cap A* or U*								Comments	Addressed
	1	2	3	4	5	6	7	8		
4D. Walk cover and side slopes in 25-ft (±5-ft) transects, and visually check vegetative cover for the following:										
4D1. General health of grass cover and signs of stressed or dead grass should be noted.										
4D2. Adequate grass coverage/density with no bares spots greater than 3 ft in diameter. Any areas with questionable vegetative coverage will be sampled for percent cover and type of vegetation using meter-square quadrants.										
4D3. Inspect the cover for the presence of woody vegetation (i.e., trees or shrubs) or noxious/invasive plants growing.										
4E. Visually inspect locations where Cell 1 monitoring equipment and infrastructure has been removed. Check for settling of fill material. Check for adequate vegetative cover.										
5. Groundwater Monitoring Wells										
5A. Visually inspect all groundwater wells for damage and integrity of well infrastructure.										
5A1. Groundwater monitoring wells										
5A2. Horizontal monitoring wells										

* **A** = Satisfactory; **U** = Unsatisfactory (comments required)

** Transect direction should alternate each inspection (North to South & East to West)

OSDF Cell Cap Post-Closure Inspection Checklist

Date of Inspection:

Weather Conditions:

Time of Inspection:

Inspection By:

Transect Direction**

Inspection Component	Condition of Each Cell Cap A* or U*								Comments	Addressed
	1	2	3	4	5	6	7	8		
6. Miscellaneous										
6A. Visually inspect the integrity of survey benchmarks, cell cap boundary markers, and corner monuments.										
6B. Visually inspect the integrity of the perched water interceptor trench (once installed).										
6C. Visually observe/inspect the corridor 50 ft outside of OSDF for signs of land use changes, settlement or subsidence, erosion, standing water, encroachment, livestock grazing, or noxious vegetation.										
6D. Visually inspect all infrastructures for any act of vandalism.										
6E. List any other observations not listed above.										

* **A** = Satisfactory; ***U** = Unsatisfactory (comments required)

** Transect direction should alternate each inspection (north to south and east to west)

Reference Sources for Post-Closure OSDF Inspections

1. Post-Closure Care and Inspection Plan, On-Site Disposal Facility
2. On-Site Disposal Facility Technical Specification #'s 02831, 02270, 02271, and 02930
3. On-Site Disposal Facility Drawing #'s 90X-5500-E-00851 and 90-5500-G-00577
4. Construction Drawing # 90X-6000-G-00073
5. Phase III Drawing #'s 90X-6000-G-00302 and 90X-6000-G-00310

Fernald Preserve Area Post-Closure Inspection Checklist

Date of Inspection: _____

Weather Conditions: _____

Time of Inspection: _____

Inspection By: _____

Other Observations: _____

Inspection Component	Condition A* or U*	Comments	Corrective Action(s) Proposed	Reference Source
1. Disturbance and Use of Fernald Preserve				
1A. Inspect access points to ensure that site restrictions and contact information are clearly posted.				LMICP
1B. Ensure that perimeter gates/fences/barriers are in proper working condition.				"
1C. Visually inspect interior and perimeter areas to ensure that no unauthorized use or disturbance is occurring.				"
1D. Note any change in adjacent off-property land use.				"
1E. Visually inspect site wetlands to ensure no dredge/fill or other type of disturbance is occurring.				Clean Water Act
1F. Visually inspect restored areas to ensure that prohibited noxious weeds are not present.				OAC
1G. Visually monitor Paddys Run to ensure disturbance of Sloan's crayfish habitat is not occurring.				LMICP
1H. Visually monitor along Paddys Run corridor to ensure disturbance of Indiana Bat habitat is not occurring.				Endangered Species Act
1I. Visually inspect site for excessive erosion.				LMICP
1J. Annually verify that all deed restrictions and other real estate use restrictions are in place and are applicable.				LMICP
2. Prevent Human and Environmental Exposure to Residual Contaminants				
2A. Visually inspect infrastructure supporting aquifer remedy to ensure that no unauthorized access or disturbance is occurring.				LMICP
2B. Visually inspect perimeter areas to verify that prohibited activities (e.g., digging, soil removal, swimming) are not occurring on Fernald Preserve.				"
2C. Visually inspect uncertified areas to ensure that no digging, disturbance, or tampering with signs is occurring.				"
2D. Visually inspect access control grating on the Main Drainage Corridor 60-in culvert.				LMICP
2E. Annually (following harvest) inspect soil cover over outfall line to ensure that sufficient soil cover (30 in) is present.				LMICP
3. Information Management				
3A. Verify that site information is available to the public and other stakeholders as planned.				LMICP
3B. Verify that information on site inspections and maintenance is readily available.				LMICP
3C. Verify that requests for site information are being addressed and fulfilled as planned.				LMICP
3D. Verify that as-built drawings and information on OSDF contents and design are readily available.				LMICP

* A = Satisfactory; U = Unsatisfactory (comments and identification on site map required)

Fernald Preserve Area Post-Closure Inspection Checklist

Date of Inspection: _____

Weather Conditions: _____

Time of Inspection: _____

Inspection By: _____

Other Observations: _____

Inspection Component	Condition A* or U*	Comments	Corrective Action(s) Proposed	Reference Source
4. Site Interviews				
4A. Contracted Land Manager—Identify any unusual occurrences or problems at Fernald Preserve.				LMICP
4B. Site Information/Data Manager—Ensure that site data is available and information is being managed as planned.				"
4C. Aquifer Restoration Manager—Verify that aquifer remediation is progressing as planned, and identify any unusual occurrences.				"
4D. Other staff as appropriate—Identify any problems or site issues.				"
4E. Hamilton County/Butler County Sheriff—Identify any concerns or issues.				"
4F. Ross/Crosby Township Police/Fire Departments—Identify any concerns or issues.				"
4G. Ohio "Call Before You Dig" Program Office—Ensure that Fernald Preserve information is properly noted to prevent unauthorized excavation on the site.				"
4H. Stakeholder groups (e.g., FRESH, Post-Closure Coalition)—Identify any concerns or problems.				"
4I. Adjacent landowners – Identify any concerns or problems.				LMICP

* **A** = Satisfactory; **U** = Unsatisfactory (comments and identification on site map required)